BEFORE THE

CALIFORNIA ENERGY RESOURCES CONSERVATION

AND DEVELOPMENT COMMISSION

WORKSHOP

INTEGRATED ENERGY POLICIES REPORT

ENERGY EFFICIENCY POLICIES

CALIFORNIA EPA BUILDING

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BYRON SHER AUDITORIUM

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COMMISSIONERS PRESENT

John Geesman, Presiding Member

Jackalyne Pfannenstiel, Commissioner

Arthur Rosenfeld, Commissioner

Melissa Jones, Commissioner Advisor

John Wilson, Commissioner Advisor

Tim Tutt, Commissioner Advisor

Susan Kennedy, Commissioner
California Public Utilities Commission

Brian Prusnek, Commissioner Advisor

STAFF PRESENT

Bill Pennington

Lorraine White

Sylvia Bender

Mike Messenger

ALSO PRESENT

Gene Rodriguez
Southern California Edison

Steven Hockerith

Jane Turnbull
League of Women Voters

Sheryl Carter
NRDC

Cynthia Mitchell
TURN

Patty Wagner
San Diego Gas & Electric

Bill Boyce
Sacramento Municipal Utility District

ALSO PRESENT - continued

Wally McGuire
Flex Your Power

Alan Sanstad
Lawrence Berkeley Labs

Doug Mahone
Heschong Mahone Group

Steve McCarty
Pacific Gas & Electric

BY TELEPHONE

Barbara George

Sid Ellsworth
SIDELL

I N D E X

I N D E X

P R O C E E D I N G S

PRESIDING MEMBER GEESMAN: Okay, why don't we get started.

This is a Workshop of the California Energy Commission's Integrated Energy Policy Report Committee. It's actually our 44th day of workshops in the 2005 cycle. I'm John Geesman, the Committee's Presiding Member.

Commissioner Boyd is unable to join us today because he's double-scheduled. He's conducting a workshop on Global Climate Change back at the Energy Commission, and we'll incorporate the results of that workshop into our record. But we have a number of other Commissioners with us today, which I think reflects the priority that the Energy Action Plan places on energy efficiency.

To my left, Commissioner Jackalyne Pfannenstiel, the Presiding Member of the Energy Commission's Efficiency Committee. To her left, Tim Tutt, her Staff Advisor. To Tim's left, Mr. Art Rosenfeld, the Associate Member of the Commission's Efficiency Committee and the Presiding Member of the Commission's R&D Committee. And to his left, Susan Kennedy, who is

the assigned Commissioner on energy efficiency matters at the Public Utilities Commission. And to her left, Brian Prusnek, her Staff Advisor.

Does anyone have anything that they wish to, to led off with?

COMMISSIONER PFANNENSTIEL: Well, I'll start, John, with a few opening comments, and they'll be very brief since we have already used up our time for opening comments. We have a pretty full day.

I really want to emphasize that this proceeding, or this opportunity to have a workshop in the context of the IEPR proceeding is really all about the importance of energy efficiency. It's, as we all know, and all of us here, perhaps the part of what I refer to as the Energy Efficiency Mafia, we all kind of are part of the, the in crowd of energy efficiency.

So we know that it's a topic of -- order, we know that it is the cheapest, most reliable resource that we have. And we also know that in California, we have the most successful energy efficiency program in the country that for the past 30 years we've been able to hold per capita electricity consumption flat, even as the

U.S. per capita consumption has been increasing.

So we have a very effective program. Our program is comprised of, I'd really say four elements, three of which we will talk about today. It is efficiency standards, utility programs of incentives and rebates, and it is programs of communication and education of customers, and it's R&D. And I know people aren't really going to get much into R&D today, except perhaps as at it affects the others, but we'll certainly talk some about the other three programs.

But the reason we're having this hearing today, or this workshop, is, is really about what we can do better. As I said, and as we all know, we've been very successful, with very effective programs. But we are going to spend a lot of money in this state, because we, we know that energy efficiency is valuable. What I keep pushing towards is the question of whether we're spending the money and getting the best possible result, whether there's more savings we could get with this much money, or for less. Whether there are different approaches that we haven't tried yet, that we should be thinking about, whether it's technology -- technology approaches, or

information approaches.

So the challenge, really, is how to move the state of California from where we are, which is a very effective program, to where we need to go, which I would say is to capture all of the energy efficiency potential that, that exists in California.

Other comments?

COMMISSIONER ROSENFELD: I just want to emphasize Jackie's, Commissioner Pfannenstiel's comment, that it's true that we're sort of preaching to the choir here, the choir or the Mafia, I'm not sure which is the right wording. But I think it's pretty wonderful that constant energy use per capita is now basically the baseline, and here we are sitting around talking about how we're actually going to reduce our energy use per capita over the next cycle of energy efficiency. Seems like a wonderful record to get into the proceedings.

CPUC COMMISSIONER KENNEDY: I just want to first of all apologize. I did walk over to the Resources Building. I was on time when I went over to the Resources Building.

But I, I also want to thank you for

inviting me to be here today. It's a continuation of the collaborative efforts of, between both our agencies, which is unprecedented, and I think we'll continue to say it's unprecedented straight through the next several years, for as long as it exists. And I think the integration of our, of our thinking and our goals and our programs has already benefitted California greatly and will produce remarkable achievements that people will look back on with a lot of pride.

So thank you for asking me to be here today.

PRESIDING MEMBER GEESMAN: Okay. An overview for the first panel, Sylvia Bender and Mike Messenger.

MS. WHITE: Before we go, I just have a couple of logistical things to cover.

PRESIDING MEMBER GEESMAN: Shoot.

MS. WHITE: The call-in number is 888-459-8594. The call leader if John Sugar, and the pass code is 31965. We had a request, because this is a public meeting, and there are multiple people hopefully on the call-in number, we would like folks to mute on their side until appropriate times for questions and comments. There's two

ways of doing it. If you have a mute button on your phone, please use that. If not, please use Star 6, and that would allow you to mute your end of the phone and not disturb the rest of the proceeding.

There are many electricity and natural gas related hearings that are currently within the proceeding for the IEPR. They're listed here, but we also have the information on our website at www.energy.ca.gov, under 2005 Energy Policy Report, and you can find all of the documents and notices, filings related to proceeding on the Natural Gas and Electricity portions of the IEPR.

MR. MESSENGER: Ready for me?

MS. WHITE: I'll be ready for you in just a second.

MR. MESSENGER: Okay. Well, let me just start by saying I'm Mike Messenger, and I'm going to have a hard time here because I'm trying to figure out where I should face just to make sure that everybody can see me. So I'm going to try here and I'm going try to scan, and if that doesn't work just let me know.

MS. WHITE: Okay. I believe -- I think you're going to have to speak into the mic,

though, in order to get this recorded and --

MR. MESSENGER: Okay.

PRESIDING MEMBER GEESMAN: Mike, my advice to you is to sit down --

MR. MESSENGER: All right.

PRESIDING MESSENGER GEESMAN: Relying on the transparencies.

MR. MESSENGER: All right. Okay.

My job today is to be short and brief. The Commissioners had suggested that we needed to have an overview of what kinds of trends and programs have been happening in the last four or five years before we get into the policy discussion of the current programs, what's right or what's wrong with them, and suggestions for improvement. So we've just put together a really fast slide show here of trends that have been reported by the utility programs. After me there's going to be a discussion of efficiency standards, and then Gene Rodrigues is also going to talk about, from his perspective, what's been happening in the last three or four years for utility programs.

So what I would ask you to do, if possible, is to hold your questions until the end,

because I'm going to try to get this really quickly, and then I will be happy to answer your questions at the very beginning -- at the end. And after I'm through I'm going to switch to Sylvia. We're going to divide this up. I'm going to do just history, 2002 to 2004, and she's going to give you some information about what the utilities' plans are for the period of 2006 through 2008.

So, next slide.

The first slide is just to give you a bearing on what's been happening in terms of program spending. And as you can see, the height of spending was in 2001, at the peak of the electricity crisis when there was a lot of latent customer demand for programs. Then there's a drop-off in spending in 2002, and ever since there's been a gradual increase to the point where actually exceeded the level of funding and spending in 2001 and 2004.

Next slide.

SPEAKER ON TELEPHONE: Excuse me. Are these on the web?

MR. MESSENGER: Pardon?

SPEAKER ON TELEPHONE: Are these on the

web?

MR. MESSENGER: Yes. I believe this presentation is on the web. Is that correct? The paper is.

MS. BENDER: Yeah. You can find this paper for this on the web. I do not believe this is being visually webcast.

MR. MESSENGER: Okay. So I'm going to be walking through figures that are in the paper that are on the web, for those of you on the phone.

Figure 2 is just an example of what kinds of programs have been funded over the last four years. And as you can see, the biggest percentage is 36 percent so-called cost-cutting programs, which are programs that go across sector, and third party programs. Roughly 20 percent of the moneys in calendar years 2002 through 2004 went to third parties who bid independent programs in and, and they administered the programs themselves. And then there's the miscellaneous programs in that 36 percent.

And as you can see, non-residential is the next highest at 28 percent, the residential at 22 percent, and then we have a separate category

called new construction, which is both residential and non-residential, and that's at about 14 percent.

Next slide.

This is just a similar slide to what you've seen, but it shows you the spending for each of the major utilities, and as you can see, it kind of goes up and down. The biggest increase that I think is significant between 2003 and 2004 is if you look at the, the pink on the top there, there's roughly a doubling in spending on residential programs between 2003 and 2004. And when I looked into the details of that, most of that is a big increase in spending on CFLs, an upstream CFL program, as well as some downstream CFL programs. So there's a big increase in sort of focusing on CFLs, I think in part because prices are dropping in that place, and I think the utilities have figured out various ways to effectively get CFLs to residential customers.

Next slide.

This is just one other slide looking at the trends in spending, and this shows you essentially what the three major utilities in California are, investor-owned utility, what

they're spending. And as you can see, the big increase between 2003 and 2004 was SCE, about a 40 percent increase in spending, in part responding to the PUC's authorization of a big increase in funding for calendar years 2004 and 2005.

Next slide.

Now I'm going to be focusing on reported first year energy savings from the utility energy efficiency programs. This is Figure 5 in the report. As you can see, there's a lot of up and down here, and the interesting trend from my perspective, that I don't completely understand, is that in the early years most of the savings was coming from non-residential programs. And if you look at 2000 and 2001, the green, again on this -- I'm not sure -- that's not showing on the slide there, but it's green in the paper. And then you'll see that there's a big increase in residential, and residential was actually bigger in the last year of this time series, 2004, relative to, to non-residential. And again, I think that's driven primarily by an increase in lighting programs.

COMMISSIONER PFANNENSTIEL: Excuse me, Mike. Just, can you give us an example of some

cross-cutting and third party programs, miscellaneous?

MR. MESSENGER: Yeah, I, I think savings by design is an example of something that goes across sectors. Programs that attempt to provide audit services or energy rankings across either the residential or the non-residential sector. And I think emerging technologies, codes and standards, all of those are programs that sort of cut across sectors.

And then the third party programs, there's a plethora of different approaches for different sectors. It was all a competitive bid where individual contractors brought in their own ideas, so it could be an agricultural program, it could be a residential program. So there's a wide variety of third party programs that are broken out by sector. There's a --

COMMISSIONER PFANNENSTIEL: That's fine. Thank you.

MR. MESSENGER: Sure. So, next slide, please.

We've just been through the first year. This peak savings, I'm sorry. And as you can see, the peak savings and the energy savings have

essentially the same shape, although there's a much bigger increase in peak savings in 2001, between 2000 and 2001, than there was on the energy side. And again, that's sort of understandable. There was a huge, as we all remember, push to reduce peak load during the crisis because there was, in some cases, you know, condition red was being proposed. We went to stage three, and as a result the utilities really, I think, strongly focused on peak savings in 2001. And then that, that emphasis, as we can see, has declined over time as the crisis receded between 2002 and 2003.

And then you see a big increase in 2004. What I would say is that a lot of these savings have not been verified in 2004, and so I'm not sure that there really was this big jump up there. It may be that people are afraid that we're using old load factors or old load shapes there. But if that is the case, that's a, it's a positive sign, from my perspective, that the peak savings are coming back again. But it hasn't been verified.

Next slide, please.

This is just a summary of the cost effectiveness by sector. In terms of globalized

cents per kilowatt hour, or in this case it's dollars per kilowatt hour and I'll convert it to cents. This is simply taking the utility's reported program costs, adding in our estimate of incremental costs, and showing what the levelized cost is for the life of the measures. And as you can see, it looks like, from this slide, that the cost effectiveness is getting better over time, at least in terms of what's being reported. It goes from, let's take the top line, the blue line there, 4.4 cents per kilowatt hour levelized in calendar year 2000, down to 1.8 cents per kilowatt hour in 2004. And that is for new construction. And as you can see, there's different colored lines for residential and non-residential, which are slightly cheaper than what I just reported for new construction.

So from, from the perspective of looking at those levelized costs and comparing them to supply options, which we'll see on the next slide, it looks like energy efficiency is still coming in much more cost effective than other supply options, and this chart illustrates that. We just took the average of the programs that reported between 2000 and 2004, which is 2.9 cents a

kilowatt hour levelized, and then we took the last values from the last adopted Commission report for the supply options in the different time periods.

So, for example, we have 5.6 cents for a baseload generation, and I think that's a natural gas plant; 11.8 cents for a plant that's used only on the shoulder; and 16.7 cents per kilowatt hour for a plant that's used for peak generation only. So from this perspective, it looks like these programs are still coming in significantly cheaper than the supply options that they are in essence competing with.

COMMISSIONER ROSENFELD: Mike, I have a question. On, on the figure where you gave the cost effectiveness in terms of first year kilowatt hours, Figure 7, you didn't do the cost-cutting programs. I guess they, they are hard to calculate cost effectiveness.

MR. MESSENGER: Well, they're hard to calculate and, more importantly, we still have some third party programs that don't have reported savings numbers.

COMMISSIONER ROSENFELD: So you can't do the calculations. I understand. And, and they carry a lot of information, carry a lot of

information only programs on their backs.

MR. MESSENGER: I believe that's true, yes.

COMMISSIONER ROSENFELD: But just to get it straight, when, when you read this average, this very interesting average of about .3 cents per kilowatt hour for all of our conservation programs, have you even included the, the cross-cutting loss?

MR. MESSENGER: I think the answer to that is no, but let me check.

COMMISSIONER ROSENFELD: See, I, I'm --

MR. MESSENGER: No, it does not include cross-cutting.

COMMISSIONER ROSENFELD: It, it includes the lines that you plotted.

MR. MESSENGER: It includes only the lines that, that are up there, because we didn't have enough data.

COMMISSIONER ROSENFELD: Right, great. Thank you.

MR. MESSENGER: Sure.

CPUC COMMISSIONER KENNEDY: I'm sorry, could you tell me once again what the cross-cutting programs include? Is it codes and

standards, did you say?

MR. MESSENGER: Codes and standards. It's, it's a variety of -- it's too big for me to list them all. It's about --

CPUC COMMISSIONER KENNEDY: And how does it differ, then, from new construction? I mean, I always think of new construction as, as benefitting from codes and standards.

MR. MESSENGER: Right. Well, in the particular classification scheme, codes and standards is considered currently an information program, and so it's not lumped into new construction.

CPUC COMMISSIONER KENNEDY: I see.

MR. MESSENGER: Even though one could argue that it should be. And --

COMMISSIONER ROSENFELD: Let me see if I -- succinctly, to Susan, Commissioner Kennedy. The codes and standards for -- your programs, they can beat the standards. I'm sorry, your programs, the efficiency programs, are, are really to beat the standards, and the, the straight time from four Title 20 programs are, are not part of this cost at all. The, these dollars here are dollars that are administered by the utilities for better

windows than the standards require, or better, more insulation than the standards require, and so on.

MR. MESSENGER: Yeah. There are a variety of programs that are statewide that cut across multiple building types, that are classified as cross-cutting, and I said, as I said before, there's information and education programs, marketing and outreach, emerging technology programs, codes and standards advocacy, and all of the third party programs which is a list of about 50 programs. So it's a big category. And, and it's, it's a continuing, I think from my perspective as an evaluator concern that we're trying to rectify that we don't have all the energy savings information from the third party programs, so we're trying to gather that up because I'm concerned that there's 36 percent of the portfolio where we don't have all the numbers yet for 2004, for example. So we're working on that, and, as I said, it just hasn't happened yet.

Okay. Next slide.

This is just for the checkers who want to know how you calculate levelized cost of conserved energy. I'm not going to spend any time

here, but basically what it is is it's converting costs into a levelized stream and dividing them by the first year savings over the life of the measure.

And now I'm going to switch to Sylvia, who's going to talk to you about sort of the results of the process that we've been going through to figure out what the utilities are going to get over the next three to five years in response to the, the PUC's adoption of energy savings goals last year.

PRESIDING MEMBER GEESMAN: Mike, I'm sorry. I, I want to move you back to the, the slide that you said you weren't going to spend any time on.

MR. MESSENGER: Okay.

PRESIDING MEMBER GEESMAN: At the very bottom line, the real discount rate of four percent per year. And in my memory, I recall I think we used three or three and a half percent real when we adopted the last set of standards at the Energy Commission.

MR. MESSENGER: I think you're correct. We've used anything from three to five over the last 20 years, in terms of what's been adopted for

the real discount rate.

PRESIDING MEMBER GEESMAN: On the theory that that's close enough for government work, or, I mean, it -- shouldn't there be some consistency?

MR. MESSENGER: The reason is the inflation rate has varied dramatically over the last 20 years, and there's been some downsizing, I would say, particularly after 2000, in expectations about what alternative investments can make. And so when we went from four percent real to three percent real, it was, I think, a, a acknowledgment that you couldn't expect the same level of real returns in the stock market given what happened in 2001.

From my perspective, four percent is sort of an average of the range I've seen between three and five. We can certainly run it with three or five, whatever people would prefer.

PRESIDING MEMBER GEESMAN: I, I just think that when we're, we're trying to perform some planning function that ends up directing either utility investments or societal investments, or our own assumptions about what alternatives might exist, that it would be important to try and develop and enforce a, a

consistent approach.

MR. MESSENGER: Okay. I'll take that back and try to make sure that this is consistent with whatever real discount is in this cycle of the planning on the supply side.

PRESIDING MEMBER GEESMAN: Thank you.

MS. BENDER: Can you hear me?

PRESIDING MEMBER GEESMAN: No, it's not on, Sylvia.

MS. BENDER: There. Now you can hear me.

Now we're going to take a look at the 2006 through 2008 programs, and this graph shows you a comparison of the projected savings from the utilities in blue, with the goals themselves in yellow.

The goals are designed to achieve 90 percent of the remaining cost effective potential that is reachable through programs. And here you see that the utilities are proposing programs that will exceed those goals over the years 2006 through '08. The first few years on the graph, 2004-05, are there for comparison, so you see there's a slight shortfall that seems to be appearing in 2004, which will be made up in 2005.

If we were to compare these net savings here to the EEPR report and the 2003 IEPR and the goals that were set out there, the recommendations that were set out there, these goals are -- actually, the utilities are proposing programs that are actually ahead of those goals. These will total over, at 2008, to be 1500 megawatts. That's 7,000 Gigawatt hours and over 116 million therms. The only place that they are slightly behind what we had originally recommended in the, in the 2003 report is in megawatt savings. Megawatt savings is slightly less than we had anticipated it would be.

Let's go to the next slide.

This table shows you the actual spending amounts that are being proposed for 2006 to '08. PG&E's numbers are actually a little bit higher than this now. We based these numbers on the May 9th preliminary proposals. The funding, as you can see, the proposed funding, is very much ahead of where it has been. There are some very very large increases being made here.

To, to put this into the context of, of uncertainty, we need to look at a few, a little bit of history here in knowing whether or not

these can actually achieve these particular goals.

COMMISSIONER PFANNENSTIEL: Excuse me, Sylvia.

MS. BENDER: Uh-huh.

COMMISSIONER PFANNENSTIEL: Before you move off of that. Comparing, looking at this table for funding with the prior graph of the goals, and you have the utility, the IOU planned savings.

MS. BENDER: Right.

COMMISSIONER PFANNENSTIEL: Now, do those planned savings equate to the funding levels here --

MS. BENDER: Yes.

COMMISSIONER PFANNENSTIEL: -- or would those require higher funding?

MS. BENDER: No.

COMMISSIONER PFANNENSTIEL: That is the funding that equates to what is in the plan. So this totals up to a little bit over $2.1 billion for the three years.

MS. BENDER: Right.

COMMISSIONER PFANNENSTIEL: But for a single year, that amount of, of funding which the PUC has determined a goal associated with that

funding, and the utilities come in and said for that level of funding we can actually exceed the PUC goal. They are proposing this funding to get to a, a number, a savings number that is slightly higher than the PUC goal.

MS. BENDER: Right. Right.

PRESIDING MEMBER GEESMAN: Sylvia, the chart that you had right before this one, the goals. If I look at the 2008 utility goal, that looks to be about 2700 Gigawatt hours a year, which you I think also associated with 1500 megawatts?

MS. BENDER: That's the total over the three-year period.

PRESIDING MEMBER GEESMAN: Oh.

MS. BENDER: That's the, that's the cumulative total.

PRESIDING MEMBER GEESMAN: Okay.

MS. BENDER: For this period. Because that's the way we could compare it to what the, what the 2003 IEPR had.

Okay. And in assessing whether or not we can achieve these goals, we need to take into account a few potential uncertainties or risks that are out there.

The first one has to do with the accuracy of the potential. The future potential will change, and there is a new report coming out later in 2005 that will alter what our future potential looks like. All of this depends on the particular saturation of equipment, cost effectiveness, new emerging technologies, and the standards. So the new potential could go up or it could go down.

The evaluation parameters that we used will also change. Our natural growth ratios are likely too high in some cases. We have new information about how long hours of operation exist for CFLs, things like that. So any of these kinds of things, how long measures actually last in the field, all of these things can change over time, and that will affect how the goals, how they, the savings are actually measured against the goals.

Ramping up programs to this level of spending may also be difficult. These are increases that are unprecedented in history. There are lots of new program ideas, lots of new implementers, and a large, large number of new programs all coming out at the same time. So

things could go slower than we might anticipate.

We're also changing the way things are counted. We are no longer counting actual plus commitments, we are only counting installations in a given year. So this also is going to affect the way things are counted in the future compared to the way they've been counted in the past.

And last, we have to worry about customer response. To get these kinds of numbers requires that the utilities reach more and more customers, they keep their current customers engaged, and that customers continue to make energy efficient decisions going out to 2013.

The last piece we wanted to add in here was to recognize some of the work that the municipal utilities are also doing. In 2004, the municipal utilities spent approximately $24 million, and this is incomplete data that we've gotten as part of the demand forecast. We've received some new data from the munis and the publicly owned utilities on their energy efficiency programs. So we are in the process of trying to get more of that data as we go along. But they've been responsible for, in 2004, 38 megawatts and a hundred -- or, 864 Gigawatt hours,

coming again from a variety of programs, fairly similar to what the IOUs are also offering.

PRESIDING MEMBER GEESMAN: Well, the programs may be similar, but it doesn't sound as if the savings associated with them are --

MS. BENDER: No, the funding is much different. Right. And again, we, we only have data from probably six out of at least 20 of them, so it's very incomplete data.

COMMISSIONER PFANNENSTIEL: Do you have data from the largest munis?

MS. BENDER: One of them. Yeah, we have data from SMUD. We don't have anything yet from L.A.

CPUC COMMISSIONER KENNEDY: The data you're getting from SMUD, is that apples to apples, or do we need to work with, with them to convince them to change the way they give us data?

MS. BENDER: Well, it's probably -- it's, they're all coming in on the same forms. We're using the data from the same forms to compare, so it should be fairly comparable. They do accounts in a somewhat different way in some cases, so there, there probably is some additional massaging that would have to go on.

CPUC COMMISSIONER KENNEDY: Thank you.

MR. MESSENGER: Does that conclude?

MS. BENDER: That concludes.

MR. MESSENGER: Any questions for either Sylvia or I?

MS. WHITE: Anyone in the audience have any questions of Mike or Sylvia?

Okay. We'll be moving on to Bill Pennington, Valerie Hall on the energy efficient standards.

MR. PENNINGTON: Good morning. My name is Bill Pennington. I'm the manager of the Buildings and Appliances Office at the Energy Commission. And I want to go over some slides here providing information related to both the Building Standards and Appliance Standards.

Just briefly, the standards programs are one of the fundamental duties of the Energy Commission that was established in the Warren-Alquist Act when it was originally adopted in 1975. This was the area that the Energy Commission immediately attacked as a duty, and adopted standards very quickly after that. The Commission has the authority to update the standards periodically. In general, that's kind

of on a three-year basis.

In particular, the Building Standards is updated on a, on a three-year cycle. We have recently updated the Building Standards and Appliance Standards, each of them, twice in the last five years in response to legislation related to the electricity crisis.

A lot of people think, or have the perception that the standards relate only to new buildings, and that's really a mis-perception. The standards also have a strong effect on existing buildings, as well. The Building Standards apply not only to newly constructed buildings, as everyone knows, but in particular to additions to existing buildings and in alterations to existing buildings. And we view the standards as an important strategy for making improvements related to existing buildings in the future.

The Appliance Standards apply to all appliances that are sold in the state. And so those appliances are used in existing buildings and new buildings, about half and half. They have a strong impact on existing buildings.

COMMISSIONER PFANNENSTIEL: Bill, before you move off of the question on existing

buildings, the Building Standards, they apply when there is a major modification or remodeling. And does that mean that the entire structure then needs to meet the then current State Building Standards, not just the new part of it?

MR. PENNINGTON: They, they apply -- when you talk about remodeling, a lot of times remodeling happens in association with the addition of additional space, like a new room or, you know, condition the attic or condition the garage where new space is, is conditioned. In those cases, that addition has to meet the standards that would apply to a new building. The standards also apply to alterations, which are any changes to energy-using equipment or components in the building that have an energy impact.

And so, for example, when you change out air conditioners or furnaces, the 2005 standards require you to seal the ducts. The 2001 standards required you to check the refrigerant charge or put in a TXV when you're making those change-outs. So usually, the, the standards look at what is the alteration in question and then develop a requirement that is applicable to that alteration to try to take advantage of the opportunity of

that thing being changed.

COMMISSIONER PFANNENSTIEL: Thanks.

MR. PENNINGTON: This is a slide that, that shows the relative savings since 1975 for different energy efficiency programs. The bottom slice is the Appliance Standards, the second slice is the Building Standards, and the remaining slice, slices are the utility programs and, and other programs. And the point of this slide is just to show that the standards have made up about 50 percent of the savings of all of these efficiency programs since 1975.

Just to go over briefly some, some historical highlights here. The Energy Commission has estimated that the cumulative dollar value of the energy savings from the Building Standards and Appliance Standards, subtracting out the cost of the measures that are required for compliance, through 2001 resulted in a savings to California of $36 billion. And those same standards projected out through the additional starts and additional equipment purchased out into the future would result in an estimate of $79 billion savings by 2013.

These numbers have not updated for the

aggressive standards that were adopted by the Energy Commission since 2001, so I'm not sure where those numbers are. But they are substantially higher than these.

CPUC COMMISSIONER KENNEDY: Would you mind telling me, give me a primer of how you calculated that?

MR. PENNINGTON: These, these are calculating the incremental energy savings from each round of standards that have been adopted. You know, there's been, I don't know, 15 or 20 adoptions by the Energy Commission since 1975, and then that's been applied to the building starts --

CPUC COMMISSIONER KENNEDY: Okay, but how did you, the, I meant the mathematical equation, how you figured the cost savings.

MR. PENNINGTON: This is just spreadsheet calculations summing up, multiplying the savings per house times all the houses that have been built since that time, subtracting out the cost of the measures.

CPUC COMMISSIONER KENNEDY: But what do you use for your energy costs, the dollars?

MR. PENNINGTON: That's a good question.

CPUC COMMISSIONER KENNEDY: Foreign

prices? Past prices? Prices at the time? Each year's prices?

MR. PENNINGTON: That's a good question. I don't know the answer to that question.

CPUC COMMISSIONER KENNEDY: And the avoided cost of each measure?

MR. PENNINGTON: Beg your pardon?

CPUC COMMISSIONER KENNEDY: The avoided cost of a particular measure, like the Building Standards or the -- that's what I'm looking for.

MR. PENNINGTON: Yeah, that's -- so each time the standards are updated the, there's research that looks into what are the costs of complying with those standards, and then that's presented in public forums and vetted, and we arrive at what are the costs associated with those standards. The energy costs, these numbers were done, you know, quite some time ago. The energy costs are probably averaging seven or eight cents, I would guess is the value of the saved energy.

MR. MESSENGER: Let me just jump in here. I, I think that that's, I think I recall seeing the study. I believe it's correct to say that it used the net present value of the cost and benefits that were calculated at each vintage of

the standards. So, let's say in 1978 they calculated some numbers and they had two billions in cost and a billion dollars in, in savings, and they figured out whatever the net present value was then for that standard, and then they just added it up each time.

So in 1975, they do the avoided costs for the period, let's say 1976 through 1995, or something like that. But when they adopted in 1987 they'd be using a different set of, a different forecast arrives and a different set of avoided costs. But I think they summed each standard adoption both the benefits and the costs to get to this number.

PRESIDING MEMBER GEESMAN: What would happen to those numbers, or what would happen to the $79 billion number if you updated your calculation to include standards that have been adopted since 2001?

MR. MESSENGER: In my presumption, it would, then it would go up. Whether it's by 10 percent or by 40 percent, I don't know, because there's only one round of standards versus 15 or 20 before, so I couldn't give you the magnitude off the top of my head.

PRESIDING MEMBER GEESMAN: I think it would be useful to have that number for our docket.

MR. MESSENGER: Okay.

MR. PENNINGTON: Okay. Over this time cycle, the resources at the Energy Commission that were available for standards have kind of waxed and waned some, but usually somewhere in the range of one to $2 million per year was available for staff and for contract work during that time horizon.

Of course, these energy savings resulted in substantial outdoor air pollution reduction as a result of reducing -- of, of avoiding generation, electric generation, and so that, that number is pretty apparent. In addition, there's been a less apparent value that the standards have projected into our air quality. The standards have had ventilation standards for non-residential buildings in them since the outset that virtually all of the air regulatory agencies point to as references. And we recently have put into the standards in 2001 requirements for duct sealing which avoids sucking, the leaky ducts sucking pollutants into the house from the attic, or

wherever the ducts, or the garage, wherever the ducts are. So in those ways inner air quality is protected.

There's a variety of conceptual advantages to the standards. First off, they avoid lost opportunities. If, if new homes and if the products are made without energy efficiency measures taken into account at the time they're made, then you end up with unnecessarily inefficient homes or buildings, or, or appliances throughout the life of those products, and those could be 15 years to 30 years for houses to longer than that. And at the time of construction or manufacture of products, you have a major opportunity to inexpensively include energy efficiency measures. If you try to retrofit those later, that can range anywhere from being impossible to do, you can't reorient a building to a different orientation, for example, or, much more expensive to do on a retrofit basis.

Another advantage of the standards is that they reach the entire market. A lot of programs that are information programs or incentives programs can't reach the whole market. They, they can, basically they get to 40 percent

or 50 percent of, of the market, perhaps, but it's very difficult to reach the rest of the market, whereas the standards can get all the laggards in the market that would be very difficult to influence through information or incentives.

Another advantage is that standards stop kind of unfair competition in the market, where low efficiency, low cost products can compete and force out higher efficiency, higher cost products. So the standards establish a level playing field that reduces that significantly.

One thing that's kind of not recognized is that standards lower the cost of energy efficiency measures, and they do that in a couple of ways. One, right after a new standard there is tremendous competition among the regulated industry to comply with the standards at lowest cost, and that competition generates innovation within the industry and, you know, the people that succeed the best after a standard are those that are able to get their, their compliance costs down to as low as possible. So that drives down the cost.

Another way that the costs are driven down is because before standards go into effect,

high energy efficiency is usually associated with premium products, and you usually have to order the energy efficiency specially, and you usually have to pay extra for that. And so basically, at that point the energy efficiency measure is a premium product that sells for premium price.

After the standards go into effect, the efficiency is incorporated in all products, it becomes standard in all products. It cannot continue to demand premium prices, and so the cost of, of the measures come down, sometimes remarkably, after a standard.

In addition, the standards raise not only kind of what's legally required and, and what, what's enforced, but they raise the standard of care. This affects the design community, this affects the, the builders' practice, this affects the contractors' practice. By having the standards in law, on paper, written down, even if they're not perfectly enforced, you have a situation where professionals who are responsible for construction are, are supposed to live up to those standards. And if there's a problem with that, that can become a consideration in court cases relative to the liability for those

professionals.

Next slide.

I liked Commissioner Kennedy's opening remarks where she said that we basically have a, a unprecedented integration of energy efficiency programs in California. And that, that's stealing my thunder here a little bit.

The way we like to, to view standards in California is that they are one element of a continuum of programs, that the programs of R&D, emerging technologies, information and incentives programs, and standards are a continuum, and, and they work together and are coordinated. And in fact, the coordination with standards in, in California with the rest of the other programs and the recognition that it's important to do that is unique. Other states have not learned that connection as well.

And, and so, you know, we're kind of breaking ground on, on this notion that we should be well coordinating all of these program activities. There should be shared goals, there should be feedback across these various programs, and there should be strong coordination. They should learn from each other, they should be

trying to achieve comparable goals.

And in, in the last several years in particular, we've been working on that. We have a very close working relationship with the -- with the PIER research program at the Energy Commission, a very close working relationship between the PIER buildings team and the standards programs, also with the PIER environmental program. And basically, PIER views the standards as one of the more important delivery mechanisms for getting the, the research results, you know, off of the -- out of the reports and, and into practice in the field as quickly as possible.

We've also had a, a very strong working relationship with the Codes and Standards programs at the utilities, particularly since 1998 there has been a major sort of each year getting stronger working relationship. And we've also recognized that there is a very important relationship between the utility programs that are promoting measures through incentives and, and information, and ultimately the standards.

The, the utility programs can think of the standards as an exit strategy. It's expensive to continually pay incentives year after year for

the same measures. Once those measures are demonstrated to be effective, they're practical, they work just fine in the market, and they are encouraged by the incentives programs, it makes sense to be considering how can those measures be included in standards. Once they're included in standards, the utilities don't have to pay incentives to get them in place anymore, because basically, society carried both measures after that. And so increasingly, we're thinking with the utilities of viewing standards as an exit strategy.

So basically, the utilities have a major stake in aggressive standards adoption, and we're seeing that in their active codes and standards programs, and also to seeing that the standards are effectively implemented once they are adopted.

The standards are mentioned in, in several current, current policy goals, and they're listed here. I', not going to go over them individually. But in each case, the standards are viewed as a significant way to achieve the goals, whether they're energy efficiency alone, or demand response, or promoting renewables, or trying to achieve greenhouse gas emission reductions.

One of the areas that's very important and, and is continually with us is that getting compliance with the standards is very important. If you can't achieve compliance, then the savings and benefits are just paper savings, so it's really important to encourage compliance, and it's challenging to achieve compliance. Related to the building standards, there's over 500 building departments in California, so this is a widely dispersed responsibility to enforce the standards. Many, many people need to be aware of them and need to be committed to them.

And it's difficult, because the building departments have their highest priority being health, health and safety, and so, you know, there's a lot of building departments that believe that energy efficiency is important to promote and, and they work to enforce that, but it's always a second priority to them, behind health and safety.

Another significant challenge is that as we try to increase the savings from building standards related to alterations to existing buildings, we confront the situation that often the building departments don't require building

permits for alterations. And there is a variety of reasons for this, but it's, it's pretty much a reality. So we need to come up with new ways of promoting compliance for those measures that don't entirely rely on the building department to enforce. We, we need to look at other strategies. The utilities need to step up and, and take a large role in trying to accomplish the efficiency improvements that are achievable through the standards provisions, knowing that building departments are not going to require permits and they're not going to get enforced at high levels of compliance.

One of the important things for the Energy Commission is to have an ongoing presence in the field, and to be a visible, to be visible in the field and to try to respond to complaints. And this is an area that has been very difficult for us. This is an area that we're not budgeted very highly to do, and, you know, we're, we're trying to do that. We have had examples of very successful investigations of complaints where we addressed complaints and, and really improved the situation. But this is an area that, that we could improve in.

One of the areas that we're trying that's new is we are about to enter into a memorandum of understanding with the Contractors State License Board. Licensed professionals, whether they're architects or engineers or contractors, are required as, as a condition of their license to comply with applicable building codes. And we're about to enter into a relationship with the Contractors State License Board to use their wide capabilities to communicate with licensed contractors and their abilities to discipline the licensed contractors to add a mechanism for trying to improve compliance as it relates to all of these licensed people that the standards rely on.

Also related to appliance standards, compliance is, is challenging, and is increasingly challenging. In the past, we've had relatively good success in getting basically appliances, large appliances that are for a national market to comply with the standards, and it hasn't been a major difficulty for the Commission to accomplish that. But increasingly, we are adopting standards that are looking at basically commodity products that are sold in a worldwide market, whether we're

talking about vampire power supplies, or light bulbs, or lighting fixtures, or consumer electronics products, those are the products where we're finding that the energy use is kind of out of control, and they demand standards.

But those products are sold often over the internet or some other widely distributed sales process that -- and are being sold to a worldwide market. They're manufactured in China, perhaps. And so how do we get California standards to be recognized by all of those sellers for those sellers to be careful how they offer those products, so that when they're offering products to California those, those products are complying with California standards. And then when they actually complete a sale to people in California, that those people have purchased equipment that complies.

And, and this is an area that we need to work on. We need the assistance of the utilities to think this through. We need to develop new approaches to, to make sure that we're being successful in reaching compliance.

Those are the end of my comments. I'd be glad to respond to any questions.

PRESIDING MEMBER GEESMAN: Bill, I know in I think the 2003 standards, we utilized a social discount rate. Is that correct?

MR. PENNINGTON: We have used a three percent discount rate since 1980, something like that, 1982.

PRESIDING MEMBER GEESMAN: And why do you do that?

MR. PENNINGTON: We are convinced that that's the appropriate discount rate to use. We've looked at the cost of borrowing money and the effect of inflation on that, and that's a rate that has been, you know, shown in our proceeding to be reasonable.

PRESIDING MEMBER GEESMAN: Thank you.

COMMISSIONER ROSENFELD: Commissioner Geesman, I have a couple of little comments.

PRESIDING MEMBER GEESMAN: Please.

COMMISSIONER ROSENFELD: I just wanted to back up two points that Bill Pennington just made, since we're trying to establish a record of the glories of energy efficiency.

Bill talked about reducing electrical demand and therefore saving air pollution. And there's one reference I'd like to get into the

record. I'm going to outline two of my favorite slides. One of them shows California electric use per person constant in the United States since the embargo having gone up 50 percent. And the question is how much pollution have we avoided by staying flat instead of going up 50 percent.

And as I remember, if you assume that pollution is just proportional to our energy grid back at the power plant or out of the exhaust pipe of a car, that corresponds to getting 15 million cars off the road in California. We have about 25 million now, so it's nice that we have only 25 million polluting us instead of 37 or 40.

The other point is Bill talked about once you make standards, you tend to reduce the price of the commodity because the manufacturer re-does all his production lines. And there's a dramatic analysis of refrigerators by David Goldstein in which he looks at real prices of refrigerators and freezers since the embargo 28 years ago until today, and, of course, with the standards we've reduced the energy use of these refrigerators to a quarter by requiring things that should be more expensive, by requiring more copper in heat exchangers and better insulation

and better motors, and so on.

The actual fact is that every time the manufacturer re-does his line he puts in all the technology that's accrued since he made that construction line and all those are good, useful and productive, and the price comes down, and the amazing thing is that instead of the price, the real price of refrigerators going up because of their efficiency, they've dropped to one-third in the last 30 years.

So there's sort of a funny name in which we, we analyze improving refrigerators and saying well, we'll invest more in certain -- more dollars in the insulation, or the kind of motor, and the price will hold, but we're saving electric bills. And then what I see happens is we save in the electric bills but we also save in the first cost.

So maybe I'll try to get that one into the record, too. Thank you.

COMMISSIONER PFANNENSTIEL: Bill, under Warren Alquist, we adopt appliance standards for appliances that use -- what is the word -- significant amounts of electricity, and the standards need to be feasible or cost effective and, and customer friendly, or however we

characterize them.

How do we think about the significant amount of electricity? Now, I know that clearly, when we're talking the white appliances, the big ones, that's a fairly easy way to think about it. But when we get down to the smaller vampire appliances and, and those kinds of things, how do we get to the point where, where we think about significant amounts of electricity?

MR. PENNINGTON: We look at that, that's a determination on a statewide basis. And so, you know, we look at that for each appliance that we're considering for standards. When an idea is proposed relative to improving a standard, improving the efficiency of a product through standards, we look at that product and, and look at the savings and look at how many units of that product are sold in the state. Before these -- units like power supplies, for example, the, the watts for each power supply is relatively small. You can cost effectively reduce that power, you know, by more than 50 percent, but you're still talking about more than 50 percent of a relatively small amount for that particular item.

But we sell millions and millions of

them, billions and billions. And so in, in terms of statewide impacts, the, the quantity really has a big effect on the determination.

COMMISSIONER PFANNENSTIEL: Yeah, I, I understand that, and, and clearly, as we are talking about our lives that are full of small energy-consuming appliances, but it, it just, I wondered whether there's a cut-off. Is there a certain amount on a statewide basis whereby you say --

MR. PENNINGTON: No, there's no standard amount. At each point the Commissioners look at those estimates and determine whether or not they are significant, in their view. But the, the discretion is entirely to the Commissioner -- Commissioners, I should say, and it's, the word is "significant", it's not substantial or more than X.

COMMISSIONER PFANNENSTIEL: Okay.

MS. WHITE: Anyone in the audience have any questions?

MS. GEORGE: Yes, I do. Hi, this is Barbara George, on the phone --

MS. WHITE: I'm sorry, you'll have to repeat that again, and could you --

MS. GEORGE: My name is Barbara George.

MS. WHITE: Barbara George?

MS. GEORGE: Energy Matters. And I wanted to point out there's a, a report by a tech market, which the, the CPUC -- a report on the upcoming 2006-2008 program plans recently filed, and they are pointing out that the utilities are providing incentives for Title 20 and Title 24 vendors. I think that was a question that came up earlier, and they have a list of various things, duct sealing, maximum AC sizing, programmable thermostats, and other large HVACs, outdoor lighting, photo controls, and they are basically saying why are we, you know, maybe we'll save energy this way. But hey, these, if these are required to be done, and it could be a lot cheaper for the Commissioners out there, I believe it was mentioned that the Commission could do some work to -- and, and that it's currently under-funded, maybe we should be able to get that instead of providing incentives.

So basically, we're paying people who are required to put these things in themselves without any incentives, and so that we're, we're doing something that might be much more expensive

than what we could do, which is that where's the code. And I think this has been an issue since the early 1990s, and it's a shame that it's not been addressed at this point.

MR. RODRIGUES: Commissioners, if, if -- could I respond to that? I, I'm actually very familiar with the tech market works report. I'm Gene Rodrigues, with Southern California Edison, one of the investor-owned utilities about which that report validated the tremendous amount of savings and demand reductions that will be coming from the 2006 through 2008 portfolios.

COMMISSIONER ROSENFELD: And Gene, just before you answer the question, the phone -- the phone connection wasn't so good. Could you, could you repeat the question?

MR. RODRIGUES: Yes, I certainly can. Ms. Barbara George pointed out, and accurately pointed out, that one of the things that the tech market works report noted is that there are instances in which the utilities are providing standards for measures that you would believe are mandated under codes and standards, and I'll give you a perfect example of one, one that's called out, in fact, by the tech market works report.

For example, under the tech market works report, it noted that if you're going to replace an outdoor lighting fixture in front of your home, take off, you know, the, the junk that's normally built there and put on the energy efficient one, that would normally require, in most jurisdictions, pulling a permit. In which case, the code would determine, or mandate that an efficient appliance with a photo cell should be put on.

Now, I'm here to tell you that I have a, I have a home that was built in the thirties, and I have replaced the outdoor fixtures on my home. And just like probably everybody else in this room, I went down to either Home Depot or Lowe's, looked for the Energy Star fixture on the shelf, and went back and did it myself. We live in a do-it-yourself world. The truth of the matter, and as Bill pointed out in his presentation, is especially on items of that nature, expecting that because something is in the code that there's a full compliance, 100 percent compliance, it, it just defies any reasonable view of the real world.

In fact, if you read the tech market report -- works report, what they noted is that

they believe that there really are savings that the utilities are getting through these incentives, because they recognize it's not a world of 100 percent compliance. But their point being that -- well, it's actually twofold. Number one, it's difficult to quantify those savings because of the overlap with codes and standards. Their second point being that the Commission should look at how to perhaps push for better compliance.

I agree with both of those findings, but I would add one thing to them. One of the things that, as Commissioner Kennedy pointed out earlier, that California rightfully should be proud of, is the amount of cooperation and collaboration between the two agencies. This, where the utilities are providing incentives to help ensure greater penetration of a measure that you would hope we can get full compliance on, is one of the ways that you continue to ratchet up not just compliance and acceptance in the market, but the ability to move those standards farther and farther up the ladder.

So I would, I would suggest that Ms. George's observation is a good one, but it should

be taken for exactly what it is. It's, it's, as tech market works points out, one of the things that we have to be careful about in not taking too blind a view that we are delivering programs in the real world, not just on blank sheets of paper, and that there's a role between the PUC's programs and the CEC's effort that needs to be very cooperative and collaborative to make sure that we're making the biggest difference in the real world.

COMMISSIONER PFANNENSTIEL: Gene, is that report in this docket, or can it be put into this docket, and they know where it is? I don't know that report.

MR. PRUSNEK: The report should be part of the energy efficiency proceeding at the CPUC. It was a, it was a report that we commissioned consultants to do, so I don't, I don't foresee any problem with, with --

COMMISSIONER PFANNENSTIEL: Then --

MR. PRUSNEK: -- putting it into the docket.

COMMISSIONER PFANNENSTIEL: Then you'll bring it into the docket. Thanks.

MR. PRUSNEK: Sure.

PRESIDING MEMBER GEESMAN: Okay. In the absence of any other questions on the phone, why don't we go to your presentation, Gene.

MR. RODRIGUES: Thank you, Commissioner.

No, no handouts, I apologize. I brought my presentation up on a memory slip this morning. I will leave a copy of the presentation here with the very capable Lorraine White, who will be able to provide you with a hard copy later. And I apologize for that, that was my timing issue.

As the title slide points out, I'm here, I'm Gene Rodrigues, Southern California Edison, but actually -- oh, you said a green light. With the able technical assistance of Mike Messenger, I now have a green light.

But kidding aside, I am Gene Rodrigues with Southern California Edison, but I actually appear today on behalf of all of the California IOUs. My colleagues from both Sempra and PG&E are here with me, as well, and to the extent there are any questions, I will share that opportunity to address them with you.

In the grand approach of all good presentation givers, I'll tell you exactly where I will take you. First, I'm going to take you just

to three points, because I believe the world is carved up into three things.

First, the policy drivers that we think about in the investor owned utilities as we put together the programs that we have been discussing so far, and the ones we propose for 2006 to 2008. Second, just a, a broad overview of our proposals for 2006 to 2008, and then a summary.

So first, the policy drivers. First, I'll start off with just a blinding glimpse of the obvious on this overview slide. For those of you who don't read the funny papers, on June 1st, the California IOUs filed with the California Public Utilities Commission a series of applications for our 2006 through 2008 energy efficiency programs. I wanted to point out, though, the Commission also had us file on that same date our low income energy efficiency programs and our demand response programs. That is an important feature of these filings, because you're going to see it later in the discussion about the levels of integration that we're trying to increase throughout the programs, which is I think a wise policy and one that California I think will be at the forefront of in this next program cycle.

The next thing is just to assure you, as you've already heard, that the applications filed by the California investor owned utilities meet all of the policy requirements of the energy action plan and recent CPUC decisions, but more importantly, the programs and the forecasts are the savings impacts from those programs filed by the investor owned utilities will exceed the CPUC's stated energy efficiency targets which were developed collaboratively with this agency.

In the mind of a utility person, let me tell you the things that we were thinking about as we were putting together the applications that are now currently pending before the PUC.

First and foremost, we are looking to maximize the use of energy efficiency as a reliable resource option, and I use those words advisedly. Energy efficiency everyone recognizes is a resource. From the utility's perspective, what we need, and from California's perspective, what we require is for energy efficiency to be a reliable option not just for the near term, but for the long term. That is the, the purpose of this docket, the IEPR, and that is the work that has been done collaboratively between the IOUs,

the CEC, and the PUC, in looking at what are the right levels, what are the types of programs, and what are the right approaches for delivering energy efficiency that 15, 20 years from now can be counted on to defer the need for power plants.

Secondly, obviously, as a regulated utility person, I'd better mention that we are obviously looking at the goals stated for us by the PUC and the CEC. And last, but not least, this notion that within the utilities, within the offices down in Rosemead, to the north of us in San Francisco, and to the south of us with the Sempra companies, all of the utilities are thinking and looking at energy efficiency the same way, no longer as a series -- let me give credit where credit is due -- no longer as a series of annual programs, sometimes less than annual programs, we're not even looking at it as three-year programs, to the credit of the PUC something that we've marched ahead on. We are looking at that as part of a 20-year plan, and that is significant.

So let me go back to what I think are the key points, the key message that I hope this report takes away from the utility mindset, or the

IOU mindset in creating energy efficiency as a reliable resource, first and foremost, that we are looking at creating balanced portfolios. And when I say balanced portfolios, they're, they're balanced across a number of features because through diversity, through portfolio management, that's where you get the reliability that's required to make energy efficiency a true resource, a resource that can be counted on in significant ways in the state of California.

So we have matched and balanced proven performers. Quite frankly, not the most exciting programs sometimes, but programs that year after year, time after time, make it easy for customers to sign up, adopt energy efficiency, because the one thing -- and Art has heard me say this before, but I cannot resist saying it again just as you cannot resist bringing out the slide that shows that we've stayed relatively level since 1970 -- the one thing that we must all recognize that, that -- is that energy efficiency is not something that we, the state agencies or the utilities, do to people. Energy efficiency is something that people choose to do. What we do from the state agencies' and from the utilities' perspective is

merely to facilitate them doing the right thing.

Second, one of the things that you'll note again, the applications across all of the IOUs, is a significant increase in growing and sustaining what we call partnership programs. Now, for the lawyers in the room, they're not legal partnerships, but the idea is a simple one. And although I've used some clumsy words here to describe it, what really needs to happen in the state of California is, as Mike and I have actually talked about on a number of occasions here, is that we need to create a durable and distributed infrastructure, a local energy efficiency network to ensure that we're not capturing just the repeat business of the folks who are participating in the programs now and participating stronger and, and more heartily than they are in any other states, but also to capture the naysayers, but also to capture the people for whom energy efficiency isn't a no-brainer.

I will tell you flat out, one of the things that I think that we need to look at in the state of California is this notion of hard to reach customers probably needs to be revisited at both our agencies and the utilities. It's really

hard to convince, or hard to spur into action consumers, because everybody out there wants to do the right thing, but not everybody does the right thing.

For California to mine deeper and broader for energy efficiency, we need to focus very strongly on making sure that there are opportunities for all of those folks to make sure that we facilitate their participating and to make sure that we're marketing and getting them in the way that makes sense to them on value propositions that make sense to the consumer.

The third pool that I've put up there is, is that when you look at energy efficiency as a reliable resource option, you must get rid of -- and I'm going to say this, and I do want this in the record -- we must get rid of the California arrogance. When California looks at its accomplishments, and they are mighty, and when we look at what's going on in the rest of the country, we must recognize that although we are doing a better job than any other state in the union -- in fact, our state alone I would argue is out-performing the rest of the country put together -- we must also look to what's happening

both inside California's borders and outside of our borders, to look for best practices, innovation, and new technologies that are not just California specific.

Two examples here that make, I think, very strong cases. But first, let me, let me appeal to I think the public servants and all of us, solving California's energy problem is a wonderful thing. But helping solve the country's energy situation is a magnificent thing. And one of the things that the California IOUs are doing and will continue to do in the next program cycle is to be part of not just making California a national leader and sustaining that across the country, but helping other jurisdictions, helping other states and, in fact, helping our friends to the north in Canada to become more energy efficient.

That is why you see within the programs and within our proposed activities things like participation in the consortium for energy efficiency, which, as the folks on the California Energy Commission know, is basically the national now, including Canada and North American association, of all the significant energy

efficiency program administration structures across the country. Why do we come together? Because we come together because we know that working together, we can change national markets. People look to California as an example, but California also reaches out as part of CEE, as part of programs like our 80-plus program that we're currently running, which will be continued into the next cycle, which looks at how to change national markets for these vampire power supplies. We can do it, but we can't do it alone. That's one of the things that we look at as part of our resource options.

The next bullet, another important one, in fact, something that Mike and I are co-conspiring on, and that is how do we find ways to utilize market participants throughout the portfolio. And, and I will argue that there are two reasons for doing that.

The first is obviously the good energy efficiency notion. You can get a lot more done if you, if you turn energy efficiency, or the energy efficiency team, from being the energy efficiency Mafia to the energy efficiency movement. And my friends, that's what I would argue we are poised

to do here in California. One of the things that we need to do, then, is to find how to create a value proposition for the energy services community, for local governments, for others to participate in the good work that we're doing, along with the state agencies, to make energy efficiency something that not just makes sense, but is taken action on as a reliable resource option.

Another point, and my second to the last point on this slide, is to ensure that we do recognize that the foundation for successful energy efficiency efforts in the state of California is customer awareness, it's education, it's outreach. And, and I do want to make a point about that. One of the things that we were talking about earlier here today was cross-cutting programs. And I would like to add to the record one thing that, that isn't recognized about cross-cutting programs.

Cross-cutting programs are called cross-cutting programs because they cut across all market sectors. That's what information, that's what education, things like that are about. One thing to recognize about those sorts of

activities, it is a, again, a no-brainer, that they do create energy savings. The thing that you have to recognize, though, if you're trying to be smart about energy efficiency, that those savings are extremely difficult to quantify. That doesn't mean the savings aren't real. It only means that there's a measurement issue associated with it.

And because of that, I would argue that you have to look not just to the amount of savings that you know are directly cast off by these cross-cutting activities, but also to the foundation they lay, so for the energy efficiency programs that are funded by the ratepayers to be successful so that we can continue to ratchet up codes and standards in the state of California so the state can lock in the savings.

I would take, offer a friendly amendment to one thing that Bill said in his presentation. Codes and standards aren't an exit strategy; they're a success plateau. It's a milestone you reach so that you can move even higher up the scale and lock in the next series of codes and standards.

And then my final point on energy efficiency as a reliable resource before I get

down off my soapbox, is, is that it is critical in California that we recognize that energy efficiency is an important tool, but not the only tool in California's tool chest -- that's a lame analogy. Let me take that analogy back. It is an important vehicle, but not the only thing that we're doing in California. The low income energy efficiency programs, self generation programs, demand response programs, all are part of California's over-arching integrated strategy. And I, I will, I will come back to that point in just a moment.

So let's go a little bit through a summary of the programs, and I promise not to bore you with program detail. But the first thing that speaks volumes and speaks volumes, I think, in terms of the credit that California deserves, is that by moving energy efficiency from a public, just a public good, which I realize it will continue to be, but into a reliable resource, you see the type of proposed investment in energy efficiency from the California investor owned utilities that is second to none anywhere in the world. We're looking at the program cycle over $2 million of energy efficiency. A lot of money

being spent. It's a good thing.

What you buy with it is more important, so let's move to the next slide. And what you buy with it is, is something that, that I want to make a couple of points about.

First, on the energy savings. Obviously, the number of Gigawatts saved are tremendously incredible. I won't belabor the points made by Sylvia earlier about how cost effective these investments are as compared to the supply side resource. But I do want to point out one thing that I think is important for all of us to recognize. And that point is in the state of California we systematically under-count the amount of savings, the amount of benefit created by our energy efficiency programs. And I'm not saying that's a bad thing. I'm just saying that's something we have to recognize.

Why do we do it? Well, it's simple. Again, some savings are difficult to quantify, although we know they're real, savings from information and education programs, marketing outreach efforts, codes and standards efforts, things of that nature. So where we have in California chosen, whether it's difficult to say

-- just not to count those savings, I want us to recognize that doesn't mean that the savings aren't real and that they aren't an important part of the portfolio. It only means we've taken a conservative approach.

To Commissioner Kennedy's question earlier today, when comparing the accomplishments of California vis-a-vis other jurisdictions across the country, I will tell you that California has the most conservative approach to counting savings. You will find in other jurisdictions where they take more classic market transformation approaches, they count the cost of a television commercial against all market activity in the market during that period of time, or the program cycle, and systematically over-count the savings from those activities.

So we're doing it the right way. By being conservative, we are creating a very solid platform for energy efficiency, but I do want us to recognize that when you take a look at some of the uncertainties around these large expansions of the IOU programs, there are countervailing things that go on. But first, let me put some of the uncertainty in perspective.

For all of the utilities, the tech market works report that we've just been discussing a little earlier today, pointed out that in terms of net to gross ratios, perhaps because we're bringing M&E up to the level that it needs to be to be tied to this level of investment, that net to gross ratios will go down because of the success of the programs, because of some of the vintage of the underlying studies. But for all of the utility portfolios combined, they can go down by some 40 percent before you have to start worrying about utility portfolios going non-cost effective.

In Edison's case, for example, they could be down on the portfolio basis by 60 percent, that's six-zero percent, before our portfolio would not be cost effective. So energy efficiency is not just a reliable resource option, despite the uncertainties around measurement issues, but across the California IOUs' portfolios, it's not just reliable, but let me assure that there's a safety margin built in there.

The other aspect of these energy savings that I, I do want to point out is that, again, to

restate that the important work of looking at beefing up -- not a very technical term -- and my measurement and -- firms wouldn't like it, but beefing up, but wisely beefing up the amount of measurement evaluation going on to quantify these savings are critically important to our accounting on energy efficiency as a resource option.

Next, let's go to the demand reductions. Again, the systematic under count issue is part of that story. But I would also point that there's two things going on when we look at both demand reduction and energy savings, and two, two policy drivers that require balance between these two commissions.

First is that in terms of our resource portfolios, especially in the near term, the savings from demand reduction are critically important to us. Critically important to us and the investor owned utilities, because it is those peaks that we really need to shave in California to make an impact, especially in the near term. One of the things I'm proudest of, of getting -- working efficiency is, for example, this year, when we, we wanted to help address California's energy situation. At Edison, we were able to make

a filing, get quick approval through the cooperation of the PUC, to basically build a small energy efficiency power plant that will reduce peak demand this summer, and it was a successful endeavor.

No other kind of power plant can be built on that same timeframe. So let's recognize those near term benefits, but the long-term benefits aren't just on the demand reduction page. On the energy savings page, those baseload energy reductions, that's where you're also going to find the most cost effective approach available in the United States to addressing global climate change. So the balance between the environmental and the economic, meaning the energy demand reduction, was what makes, I believe, energy efficiency, not just the state's preferred resource, but what ought to be the preferred resource across the country.

And electricity demand isn't what's only being addressed here in California. On the therm savings page you'll see not just a significant increase on the amount of therms saved, millions of therms being saved by the utilities that have gas programs, but you'll also note a tremendous increase in, both in the investment and in the

amount of energy and enthusiasm from those utilities.

But I would also point out on this page yet another place where you see that systematic under-counting of the impacts. On Edison's column, we do not count therm savings from our programs. Why? Well, because we're an electric utility, that's, that's the "duh" part of it. But if you know anything about energy efficiency, building envelope improvement, the improvements in how a building is built, et cetera, et cetera, et cetera. Those create therm savings to places with gas heaters, and here in California most folks have gas heat. We don't count them because that conservative approach that California takes, again, let's recognize that we're doing even more than we take credit for in California.

This next line is something that, that I, I put in there not because I need to make this lecture to you, but to tell you that this is what we are telling people in our service territory. And that is that energy efficiency, what you see provided to the PUC as, in the way of applications for 2006 to 2008, are the cleanest, cheapest resource that California can buy. And we should

all take great pride in that.

And so from there, let me tell you then how we go about planning. First and foremost, what we see on this page and what we'll see on the next page are a resource acquisition and all cost effective potential approach to thinking about how to go about capturing the benefits of energy efficiency both near term and long term in the state of California.

Again, what you see are a series of umbrella programs, I would call them foundation programs despite the fact that at the top of this they may be the roof programs in this slide. But as Bill pointed out, something that California should be proud of is the tremendous collaboration between the two agencies represented on the dais today.

I will tell you that, for example, in emerging technologies and codes and standards, that is a success story that's been going on quietly, it's a success story about the collaboration between the agencies and the IOUs. For years and years and years, it's been quietly effective and tremendously effective, because Bill's slide is one that I hope that you did take

to heart.

The, the notion of the IOUs' programs, isolated from the work that's done at the emerging technologies end of the spectrum, all the way through locking in the savings at the codes and standards end of the spectrum, is a wrong view of the world. We are all part of an integrated whole, and that's why I will argue that from now on we shall no longer say energy efficiency Mafia for any of us in this group. We shall now say energy efficiency movement.

Again, just another slide that I think gives a nice picture that makes an important point. The types of resources available, and all of them important in cost effective in their own way, the types of resources available, your energy efficiency programs are the programs that reduce not just energy savings on, on a baseload basis across the whole spectrum, but also if you look up the, the curve that you see on the page, also configures the peak demand reductions.

Now, I am an energy efficiency advocate, first and foremost. But I will tell you that we would make a mistake if we believe that energy efficiency is always the best or always the most

cost effective tool for peak demand reductions. It isn't. Energy efficiency has to be part of the large portfolio with demand response programs.

But I will argue, as an energy efficiency advocate, that once you make an energy efficiency retrofit, or once you build a building to energy efficient standards, that first time investment continues on for the useful life of the hardware, the useful life of that building, et cetera, making it a tremendously cost effective way to address a peak demand near term and long term in California, especially for the long term.

COMMISSIONER PFANNENSTIEL: Gene, let me interrupt for a second.

MR. RODRIGUES: Yes.

COMMISSIONER PFANNENSTIEL: Then when you, you showed earlier the peak reduction programs that anticipated peak reductions. Those are from the energy efficiency programs, not from demand response programs. Is that correct?

MR. RODRIGUES: That is absolutely correct, Commissioner Pfannenstiel.

COMMISSIONER PFANNENSTIEL: That would be -- on, on this slide, then, below the, below your, your load duration curve line.

MR. RODRIGUES: Right. Absolutely, that is the case.

So let me take you to kind of the closing slide and the points that I hope you will take away from this presentation.

The first is that California and California's IOUs, are on the right track by fully integrating energy efficiency as a reliable resource option. One of the things that I, I would hope that we all recognize, and it's something that we have recognized in the past and I'm going to just remind us to keep it in mind, is that the goals that were set, as I believe were in Sylvia's presentation earlier today -- well, no, it was actually Mike's presentation. I'm sorry, Mike, stealing your thunder there.

The goals that were set were one stab at setting goals. Those goals need to be reviewed and addressed on a regular basis so that we recognize that we are being as aggressive as we can be, but we're also being thoughtful about what can be accomplished in the state of California, because the real goal for California isn't just to hit a number that is based on a forecast that was done with information that's now five years old.

The real goal for California is for maximizing the utility, the energy efficiency opportunities and maximize the penetration of those opportunities.

The next -- I'm sorry, that bullet is still in there, but it's just a bragging point for me. I'm reading the, the latest draft of the energy action plan, I say bravo to all concerned for keeping a focus on energy efficiency as California's first -- resource. It is the best of the resource options, economically and environmentally advantage.

And the last point is just to congratulate these two commissions for once again leading California back into its rightful leadership role in energy efficiency. And with that, I would certainly welcome any questions, and my colleagues from Sempra and PG&E are ready, as well.

PRESIDING MEMBER GEESMAN: You heard Bill describe our historical practice of using a social discount rate when we're evaluating the efficacy of new efficiency standards. I would suspect, although I don't know for certain, that from the utility's perspective, you probably use a cost of capital discount rate in evaluating

programs. My hunch is that that probably results in a different type of program selection than would be the case if you used a social discount rate. I wonder if you could elaborate on that.

MR. RODRIGUES: I certainly can, if you -- and if you don't mind, I will also fill in a little something else to think about while I have your attention.

It was absolutely the case that as, as between the agencies in California and over the last ten years, that there are -- have been identified and have been utilized a number of different means to quantify the cost and the benefits of the energy efficiency programs.

The thing I would ask you, Commissioner Geesman, to consider, and for all of us to consider, is that we need to be careful in two regards. One is that sometimes I get concerned that we get so caught up in the elegance of the machine, and we get so caught up in, in -- using formulaic approaches to decision making that it is easy to lose the importance of the role of judgment in managing a portfolio, and, in fact, selecting a portfolio.

And in that regard, I, I hope this

serves as kind of a tee up for one of the panels you're going to hear about later. One of the things that I think that we do need to take a good hard look at in the state of California is without throwing out all the current tests we have available with us today, but recognizing, especially in the near term, the role that energy efficiency can play in reducing peak demand, it may be time to think about some way to give a bonus or additional amount of credit for energy efficiency applications, not the programs, but applications that address critical peak load and get it offline, or get it moved quickly.

It's much the way that we currently look at demand response programs. Demand response programs, when you value the best of those programs, you look at it in terms of when it's time to push the button, will this keep the lights on in California. What's the value of that? I would argue that it's infinite. The, the economic, our people, if the lights go out in California, is tremendous.

Energy efficiency plays a role in that, as well. But we will, on the IOU side, do the job that we're asked to do, which is to manage these

portfolios to meet all the goals and expectations that, that these two agencies set out for us. If we want to start looking at how we might be able to focus maybe a little more effort on the critical peak demand, then I would ask that let's use this as an opportunity for all of us to work together collaboratively, IOUs and agencies alike, to figure out what the right way to do that is that doesn't throw out, you know, the last ten years of, of study that quantifies the benefits of these programs.

MS. KENNEDY: I'm sorry, did you answer Commissioner Geesman's original question?

MR. RODRIGUES: I believe, I believe I did, I hope to your satisfaction.

PRESIDING MEMBER GEESMAN: Well, let me try it again.

MR. RODRIGUES: Okay, I'm sorry.

PRESIDING MEMBER GEESMAN: I am, I am concerned that using a high discount rate as compared to a low discount rate probably skews your evaluation toward behavioral oriented programs and away from investment oriented programs. I don't know if that's the case, this is not my field, but I, I do pick up a fairly

strong difference in perspectives between the discount rates that the utilities use in evaluating their programs and which the state uses in setting standards.

I, I will tell you that for the energy efficiency programs, since as part of that systematic under-counting of the benefits for our programs we traditionally have not counted savings from information, education, and behavioral activities, despite the fact that we know that the savings are there. So because of that, I would say that there is perhaps, if you were to look at that approach, a concern, and a reasonable concern, that we would under-fund those sorts of activities.

Now, the truth of the matter is that energy efficiency is such a tremendous investment, such a cost effective investment, that we're able to do the right amount of information, education and marketing and outreach and behavioral based activities like energy audits, et cetera, because the, the hardware driven programs, the resource programs that actually carry the portfolios.

I don't know all the utilities' numbers, but I know for Southern California Edison the cost

effectiveness of our portfolio as a portfolio is 2.76. So we could carry as much of the behavioral and information and education programs as we thought we needed to make the investment hardware related programs successful.

You need your mic on.

MR. RODRIGUES: Oh, sorry. Yes. Commissioner Geesman, can I take a shot at your question?

I've looked at this question before, because I've been concerned about it as well, and I, I think the problem is when we go from a public goods fund approach to a resource planning approach where generation supply options have to go out into the marketplace to raise capital and they face this cost of capital constraint, I think that's the place where we really haven't come to an agreement about how to balance these things. So let me just give you some facts before I get to the philosophy.

We -- we use a three percent real discount rate, in some cases we've used four, but three percent pretty consistently in building standards. The current equivalent that's being used in like today's applications is about a six

percent real discount rate that the utilities are using. That's because they're using about a nine, ten percent cost of capital, and when you take inflation out it's about a six percent real.

Now, the reason for that is that when the utilities go through a resource planning process they're under a variety of rules that say to them when we're comparing these options we have to use whatever cost of capital we're actually going to face in the marketplace where we could go out, for example, and buy a transmission line or buy a generation plant. So we're going to use that same rate when we -- when we evaluate energy efficiency programs. This is the argument that's made.

Whereas for the building standards, we don't have to go out into the capital markets to seek funding for customers, for example, to build a slightly more efficient building, and so we have always said, and based on what's in the Warren-Alquist Act, we're going to use the societal discount rate, we don't need to use the going cost of money.

So there's a conflict between paradigms, for planning paradigms here, because one is sort

of a resource planning paradigm and the other one is sort of a social building standards paradigm. The result, I think, is a slight conservatism, and maybe it's more than slight, but I don't think there's that effect that you talked about, which is an important one, which is I don't think there's an effect that shifts us away from an investment focus towards a behavior focus because I haven't been able to see it over time when the, when these discount rates have changed.

There hasn't been a shift, for example, when we went through a higher inflation period when they were using cost of capital in the 14, 15 percent place -- or, range, that they shifted more towards operational. I think the basic difference is one of being more conservative with ratepayer money when you shift to this higher discount rate which the utilities are using right now.

Having said all that, I don't, I'm not sure what the right answer is between these two paradigms. They just haven't blended yet, and they do use different discount rates.

PRESIDING MEMBER GEESMAN: From the standpoint of state government, why aren't they the same? Why, why doesn't the state decision-

maker look at the building industry which does have to go out into the market and raise capital and pay for all these things, the same as it would the utility? Or vice-versa. Why doesn't the state decision-maker look at the utility the same as it has the building industry and say, you know, these are social investment choices and we're going to use a social discount rate, and it's all resource planning.

MR. MESSENGER: I think I agree with the thrust of your question that it would be better if they were consistent, and I just think there's historical reasons why they're different and they haven't yet been merged.

PRESIDING MEMBER GEESMAN: Thank you.

COMMISSIONER ROSENFELD: Just, just a comment for the record. It doesn't solve the headache, but Gene Rodrigues just quoted Southern California Edison benefit to cost ratio is 2.6 to one, which seems to have a lot of safety factor in it between power plants and conservation.

PRESIDING MEMBER GEESMAN: Yeah, but if, if you're looking at what we have done to the California ratepayer in passing through fuel costs that have gone up immensely over the last couple

of years, perhaps 2.76 to one is far too generous and we ought to be forcing the investment into the sector until we're about 1.3 or 1.4 to one. Maybe we've undersized the program.

COMMISSIONER ROSENFELD: I think that's exactly right. I was going to make that point, but thank you.

Gene, though, I have one, I don't want to edit your document in, in public, but for the record, you have a number of nice spots with savings in billions of kilowatt hours or Gigawatts. And I, I believe that the people who read the IEPR report are probably more inclined to think of oh, gee, that saves half a percent per year, or one percent per year or something. I'm wondering if before you make it formal you could add some -- at least tell us what the total IOU Gigawatt hour savings were, and megawatts, so that we can convert to percent, or maybe you could actually add a column which makes it a little more uniform.

MR. RODRIGUES: We can certainly do that.

COMMISSIONER PFANNENSTIEL: I have no questions. But thank you, Gene, it was a really

useful presentation.

MR. RODRIGUES: Thank you.

PRESIDING MEMBER GEESMAN: Yes, thank you very much, Gene.

MR. RODRIGUES: Thank you, Commissioner.

PRESIDING MEMBER GEESMAN: Why don't we try to get the first panel done before our lunch break, and I, I'd suggest that we break for lunch at about 1:00 or 1:15.

MS. WHITE: Okay. I think we can do that.

MS. GEORGE: This is Barbara George, and I have a comment and questions.

PRESIDING MEMBER GEESMAN: Why don't you go ahead, Barbara. The panel is setting up right now, but we can take your comment.

MS. GEORGE: Thank you. I wanted to comment on a couple of, of Mr. Rodrigues' statements. He mentioned that we should not be arrogant, but then he went on to say that California is the best in the country. And the data that we have been seeing in the energy efficiency proceedings at the CPUC is that Texas is actually getting 40 percent more energy savings per dollar than California. And that is even

without considering the exaggerated savings claims of the utilities.

In, in point of fact, there has been a systematic exaggeration of savings in the past few years. This is now being rectified because the CPUC has taken measurements in house, which used to be controlled by the utilities, that the utilities are admitting that their accomplishments from the past couple of years, of 2004 and 2005 programs, are going to be reduced from, in some cases, the residential program is going to be reduced by 44 percent to 50 percent on their savings claims for kilowatt, kilowatt hours and therms. And special efficiency programs have been exaggerated by over a quarter, 23, 32 percent. And, of course, this really impacts whether you can use efficiency as a reliable resource.

These, these reductions have to do with changes in the, in the -- savings database. They also have to do with the fact that compact fluorescent lighting in expressed efficiency in the, in the small business programs have been exaggerated by 400 percent. This is now a -- and this comes from an official evaluation of the statewide expressed efficiency programs for 2003,

and the Edison summer program finally admitted, in response to our comments, that they had -- that they were exaggerating CFLs, they had, they had to reduce them from a claim that they were going to last for eight years, now they are admitting that they only last for two years. That's why you get the 400 percent exaggeration.

Additionally, the California program failed to address the peak, and that's critical because the peak load, of course, is what drives the construction of new power plants. And many parties in the current program, which are evaluating the next three years for the utility programs, are pointing out that lighting is 94 percent of the, of the kilowatt hour savings in the California programs, the facilities are offering.

In Texas, the, the air conditioning, other -- measures are 65 percent of the program and lighting is only three percent. Therefore, we have to build many more power plants and transmission lines in California to make up for the fact that energy efficiency is not being used in a way that would, indeed, reduce our need to build the supply side resources and to buy the gas

and nuclear power.

I also want to comment on his statement that we should have a, we should have a movement instead of a Mafia. I definitely call it a movement. The, unfortunately, the utilities have been given complete control over all programs in spite of the fact that third parties running independent programs have been getting more savings per dollar than the utilities in almost every residential program, and they were equal to the utilities in commercial programs in spite of the fact that the utilities had 30 years to perfect their programs and, and the third parties were brand-new. There has only been independent third party programs running for four years, and unfortunately, the CPUC decided that they were still going to give all the control of the programs back to the utilities.

PRESIDING MEMBER GEESMAN: Okay. Gene, we'll give you one minute to respond.

(Parties speaking simultaneously.)

MS. GEORGE: -- they are spending $57 million just to speed up energy savings. There's no new kilowatts being saved in those programs. They're just expediting programs. And I think

that's a terrible waste of money and shows bad planning, and it also reflects the fact that these last few years, the reliability of the savings are not -- are a problem, because they have not been correctly measured.

PRESIDING MEMBER GEESMAN: Okay. Thank you, Barbara.

MR. RODRIGUES: Thank you, Commissioner Geesman. I, I would only recommend that as for the best way to deal with, with that series of comments is what you've already suggested that you are going to do. To the extent that there are questions about the viability of the savings, the robustness of the savings, and the reliability of the savings and demand reductions for the utility portfolios, I would recommend to you the tech market works evaluation of the utility portfolios which was commissioned by the CPUC by a -- and undertaken by a third party, taking a look at the portfolios planned by the utilities.

The thing that I think you would point -- see out of that is, number one, a recognition of the strength of the process, which was a public planning process, which all participants were invited to. Number two, as I pointed out earlier,

that the savings safety factor, if you would, is very robust in the utility portfolio.

And number three, tech market works itself recognized that even if this list of horribles were to happen and 60 percent net to gross reduction were to occur, that there is a systematic under-counting, although they don't use those words, of energy savings from other sorts of activities, information, education, marketing outreach, codes and standards, things of that nature, which would certainly make those utility programs portfolio.

As to the issues that were unrelated to the IEPR, I would just advise everybody --

PRESIDING MEMBER GEESMAN: You don't need to address that.

MR. RODRIGUES: -- yeah, that the Commission at the PUC has heard each of those arguments before and has a full record, and making decisions based on that.

PRESIDING MEMBER GEESMAN: Thank you, Gene.

Let's go to the next panel, then. Sheryl Carter, NRDC.

MS. CARTER: Good afternoon,

Commissioners. I'm Sheryl Carter, with the Natural Resources Defense Council. I'll try and be very brief since we're sitting between everybody's lunch.

Energy efficiency, as we have already heard, and I think everyone agrees, is our quickest, cleanest, cheapest energy resource hands down. It's a win/win for customers, it's a win/win for our economy and for our environment, and California's experience over the last 30 years proves that out, as well as recent policies in the Energy Action Plan reaffirming it, not to mention the impressive collection of, of Commissioners up on the dais today.

I think it's important that we take a step back, as Commissioners Pfannenstiel and Rosenfeld encouraged us to do this morning, and look at how incredible what we're doing today here, today, really is. Not that we should be arrogant about it. But I work in several different states on energy efficiency and other sustainable energy issues, and I can tell you that we're all here to talk about how to improve the effectiveness of the most effective energy efficiency efforts in the country, heck, the

world, that that fact is truly amazing. And it's something that we should recognize as we strive today to develop ways to become even stronger in this area.

I just, I'm going to focus on four main points today. The first is the mere fact that even after 30 years of investments, albeit waxing and waning ones as, as Mike's slides showed earlier, you could carry those ups and downs back through 30 years of our experience here in California. But despite that, the fact is there's still an incredible amount of cost effective potential, it really proves that there will continue to be new technologies, new ways of achieving energy savings. Because of new innovations these opportunities are not likely to ever cease.

We just need to make sure that we keep working to find them and to implement them. If we do that, we should be able to accomplish our long-term goals here.

The second point is likewise, there will be a continued need for program investments and for codes and standards because of inherent market failures, most of which can only be mitigated and

not eliminated because of the very nature of our economy. While great -- while it's a great thing to strive for, because of continued innovations and market barriers, we shouldn't kid ourselves into thinking that we're going to be able to eliminate, at least in the near and mid-term, the need for voluntary programs, codes and standards.

Third, we need to strive to include the whole state in these policies, even if the methods for implementing them may differ, as in the case of consumer owner utilities. While there are some real outstanding examples of consumer owned utility energy efficiency programs and savings levels -- SMUD has always been a leader in the state -- we have found that overall, it isn't a consistent record. Most aren't doing independent measurement and verification, which is really crucial for energy efficiency to be considered a resource in the state. And the savings levels are definitely not at the proportionate level as the goals established by the CPUC.

We need to do more to work with the consumer owned utility community to overcome the barriers to full implementation of the all cost effective energy efficiency first policy.

Fourth, as we move forward in the debate over what the structure of the industry should look like, we must be very careful not to jeopardize what we have accomplished here and have in our sights to accomplish through energy efficiency in the future. We must ensure that all load serving entities in the state share the responsibility for achieving these goals no matter what model we end up with.

Just a little bit on the last 30 years. We heard a lot about the last five years of accomplishments, but I still think it's very useful to, to review what we have accomplished in the state.

Our investments in energy efficiency programs and improvements in building and appliance efficiency standards over the last 30 years has enabled California, as Commissioner Rosenfeld said, to hold per capita electricity use essentially constant while the rest of the nation's per capita electricity use increased by nearly 50 percent. This is significant. We've saved more than 10,000 megawatts of peak demand, about 20 large power plants, about 35,000 Gigawatt hours each year, equivalent to about 14 percent of

California's energy consumption.

COMMISSIONER ROSENFELD: You said while the rest of the nation went up by 50 percent.

MS. CARTER: Uh-huh.

COMMISSIONER ROSENFELD: But actually, 50 percent increase was for the United States as a whole, including New York and California. If you take out those states and look at the rest of the United States, it went up by 75 percent.

MS. CARTER: You, you are correct. And I was just trying to keep it conservative, as we've been doing today. But you're right, it's even more impressive than, than I originally said.

We've also increased California's inflation adjusted economic output per unit of electricity consumed over 40 percent, while the rest of the nation increased by only eight percent, demonstrating that the, the economic growth need not be accompanied by proportional increases in power consumption, and I think that's a fact that more and more people are recognizing throughout the United States because of California's example.

Our most recently adopted energy efficiency standards for buildings and appliances

and the aggressive goals established by the PUC have already been talked about here today, so I won't go over those further.

In terms of market barriers, my understanding is we're going to hear a presentation about these issues later on today, but just a little bit about those.

The, the evidence of market imperfections that lead to under-investment in energy efficiency has been compiled in recent years by the National Research Council of the National Academy of Sciences, by the U.S. Congress' Office of Technology Assessment, by the National Laboratories, and the National Association of Regulatory Utility Commissioners, among many others. So these are well established principles.

There are many explanations for individuals' and businesses' almost universal reluctance to make what appear to be relatively lucrative energy efficiency investments, given reasonable estimates of the cost of capital they face by consumers. Decisions about efficiency levels are often made by those who will not be paying the electricity bills, such as landlords or

developers of commercial office space. Sometimes what looks like apathy about efficiency merely reflects inadequate information or time to evaluate it, as anybody who's gone to replace a, a refrigerator that's just broken down, or a water heater, well knows, and most people use an entirely different discount rate for these investments.

One thing, one finding made by a NARUC report really brings it home for me. This is a, a two-year payback customer paying an average rate of seven cents a kilowatt hour can be expected to forego energy efficiency measures with costs of conserved energy of no more than .9 cents per kilowatt hour. That means that energy prices would have to increase eight-fold to overcome the gap that typically emerges in practice between the perspectives of investors in energy efficiency and production, respectively.

I just bring that up because one of the major questions that we are supposed to be discussing today, going to be discussing later, is, you know, how can we eliminate the need, or reduce the need for these programs, and we need to recognize in, in moving through, that these

barriers do exist. And unless we can eliminate those barriers, we're going to need to mitigate them through programs and codes and standards.

Successful implementation of the municipal utilities' energy efficiency programs is vital to the realization of California's energy efficiency goals, as well as our global warming goals. There is an urgent need, we believe, for substantial readily available information about the impacts of public benefit investments by the consumer owned utilities. As Sylvia discussed, we've, we've been having problems getting complete and consistent information, and we really need this information to evaluate where we are as a whole state since the consumer owned utilities do make up about 25 to 30 percent of the state.

It's clear from a review that we did, a sampling of a handful of, of northern and southern California consumer owned utilities, that overall, energy efficiency targets and achieved savings are now lagging well behind those of the state's investor owned utilities. Energy saving targets for the state's energy investor owned utilities are now more than double the levels that had been achieved through system benefits investments

alone.

To our knowledge -- and, and they're also fully integrating energy efficiency with long-term procurement. To our knowledge, California's publicly owned utilities aren't currently integrating energy efficiency into their energy resource procurement, with some notable exceptions. We really need to, I think, step up efforts to work with the consumer owned utilities to identify any barriers that might be standing in the way to fully implementing our energy efficiency policy in California, and put more effort into getting more consistent and complete information about what's going on in terms of, of savings and investments moving forward.

And finally, any restructuring of the energy industry in California, there are a couple of different models being talked about and I won't go into those specifically, but we need to make sure that under any new model that we go into for the energy industry in California, that we're able to preserve the ability for entities to make long-term investments in energy efficiency programs. If, if we don't do this, we're going to be leaving it up to the market again and we're going to see

yet another dip in, in energy efficiency investments. And, and I think the best thing for the state is to continue a high level of consistent investment moving forward.

Just a couple of comments on the measure related questions that were given to us for this workshop. We need to be careful not to focus solely on savings per dollar spent. Cost effectiveness is really important and critical. We need to make sure, though, that we have comprehensive long-term measures, so a sole focus on the dollars per kilowatt hours spent could lead us to focus on near-term savings at the expense of really important comprehensive programs and create lost opportunities.

In that vein, cost effectiveness is very important, but it needs to be, we need to continue to look at it on a portfolio-wide basis. Some of the discussion earlier points out that there are a number of programs that we can't easily peg energy savings to, and we need to make sure that these are an integral part of the portfolio, and we can do that by making sure we apply cost effectiveness on a portfolio-wide basis, and not program by program.

So finally, we believe we'll be able to accomplish our goals in the long term as long as we continue to tap into the new technologies and practices. We think that the integration that was talked about earlier between the PIER program and as well as the, the codes and standards on the other end as bookends to these programs, are really -- really critical, and we need to work to continue to mitigate the market barriers.

We shouldn't forget our successes. We have accomplished a great deal, and we need to make sure we preserve these successes and our ability to, to do more in the future. Thank you.

PRESIDING MEMBER GEESMAN: Sheryl, I believe I heard you say that you felt the utilities, the investor owned utilities were appropriately integrating energy efficiency into their procurement activities. Was, was I clear on that?

MS. CARTER: Well, while there is always room for improvement, because that's what this workshop is about, very definitely, integrating energy efficiency, because of the policies set out by the state, as a resource and looking at it as a resource for their long-term planning and

procurement, this is something that we don't see in other areas of the country at all.

PRESIDING MEMBER GEESMAN: So do you have any, any structural changes that, that you'd like to see in the way they, they do integrate efficiency into procurement?

MS. CARTER: I don't, I, I mean, I think that there are incremental changes that need to -- and improvements that continue, need to continue to be made. More fully integrating staff in the utilities, for example, the energy efficiency staff, with the, the procurement staff, and those efforts, which, which is starting to happen, is we think the right direction to go, and will ensure energy efficiency continues to be looked at as a resource and not just a, a set aside program that's separate and has to be integrated later.

PRESIDING MEMBER GEESMAN: How would you incorporate energy efficiency considerations into CPCN decisions on transmission projects?

MS. CARTER: Well, in addition to making sure that we're pursuing all of the cost effective energy efficiency that we can in the total portfolio, we've been doing quite a bit of work with the Bonnevile Power Administration, who has a

program to, that, that is now integrating the consideration of cost effective alternatives including targeted energy efficiency, demand response, distributed generation, and other alternatives to transmission, or into transmission planning.

And in a lot of cases, what they've found is that they still do need the transmission line, although in some cases what they've found is congestion on a particular line can be alleviated through these targeted measures, and it can either negate the need for an upgrade or, or delay it, saving customers a lot of money.

PRESIDING MEMBER GEESMAN: They, they address that in a planning context, though, don't they, as opposed to individual case by case decisions?

MS. CARTER: Actually, they're doing it on a case by case basis.

PRESIDING MEMBER GEESMAN: Oh, okay.

MS. CARTER: It's, it's an interesting model to look at.

PRESIDING MEMBER GEESMAN: Thank you.

COMMISSIONER PFANNENSTIEL: I just want to observe that your, the points that you made

about market barriers and imperfections I think is really points very well made, and I hope that further in this workshop, as well as other considerations, that's really what we need to focus on. Let's identify those market imperfections, and by identifying them let's try to find some ways of overcoming. Some we will not be able to overcome, there's a certain amount of inherent laziness in us all, I, I assume.

But I do think that if we can decide whether it's a matter of information, availability of information, rapid response to information needs, trying to find different very specific ways of overcoming each of those, maybe we can put some of our energy efficiency funds specifically into overcoming the market barriers, by which then we can free up some money that we don't necessarily have to put into, to incentive programs.

COMMISSIONER ROSENFELD: I'm wondering if you can be a little more specific, Sheryl. You talked about a certain tendency to go for the immediate gratification over a short term, rewards in the portfolio versus longer term investments. And I'm wondering if you can give some, give some examples of where you think we're sliding in our

longer term investments.

MS. CARTER: Well, I, I don't know that we're necessarily -- I can't give any specific examples because I didn't mean to say that we were doing that now. But we have, we have done it in the past, and we -- with the, with the focus solely on the, you know, dollars spent per kilowatt hours saved, we risk sliding back there again.

What I'm trying to make sure that we do is maintain a balance in the portfolio that encourages the pursuit of comprehensive programs, that meld in longer term payback measures with short term payback measures.

COMMISSIONER ROSENFELD: What was really difficult in the past, and we didn't have this nice long three-year planning cycle -- I mean, this, this whole hearing is supposed to be how can we, as, as Commissioner Pfannenstiel just said, how can be tune up our work. And so I'm sorry to be repetitious, but if, if we're really signing things with five year or ten year paybacks, it'd be, it'd be nice to have you -- if I could understand the specific problems, I would be more comfortable here.

MS. CARTER: I, I think it's more of a measurement issue. I mean, it certainly has helped that we've moved to a three-year planning cycle, and, and actually on, on a 20-year cycle in terms of, of long-term goals. But I think it's more of a measurement issue in terms of what you, in the decision-making process, when you determine what programs are in and what programs are out, and, and you also give the utilities a signal in terms of what kinds of goals they have to meet, you set certain measures to be achieved.

If you, if you put too much emphasis on some or others, you're going to incent certain kinds of programs over others, and I think that was just my point, that too much of an emphasis strictly on dollars per kilowatt hour saved could lead to, you know, shorter term investments and less comprehensive programs.

So it was, it was more of a caution than a, you know, we're doing this wrong. I just, and I was responding to one of the specific questions that was given to us for the workshop.

CPUC COMMISSIONER KENNEDY: You know, some of these concerns are, are coming out in the process we've set up which includes some peer

review mechanisms with stakeholders at the, at the table, just like we, we noticed that the critical peak pricing -- I mean, critical peak savings not necessarily adequately addressed in the way that we structured the program. This is not a fault of the utilities, this is the way we've structured it, and that's the way they made it go. So it gives us a signal that we have to go back in and alter our goals and our, our incentives for the utilities in order to get the result we want, which is to address that issue.

The same is true when we look at where the, where the, when they put in their plans on June 1st, we looked at the projected savings and where they're coming from. When you see such an, such an enormous increase and emphasis in lighting, you know, that would raise a question, is that the, is that the most cost effective long term, or is that a short term way for the utilities to meet, to meet that goal.

So it's a, we're not necessarily doing anything wrong just yet, but these are signals that we have to pay attention to. And I think what Sheryl pointed out is one that, a lesson we have to keep reminding ourselves of, because we

will fall back into the let's, let's have some tangible goals now, some tangible, easy measurable goals now instead of the bird in the, the two in the bush. And we'll hurt ourselves.

PRESIDING MEMBER GEESMAN: Why don't we go to our second panel member, Cynthia Mitchell, from TURN.

MS. MITCHELL: Good afternoon. I hope to keep you not too long. I've got about 15 minutes of prepared comments. I wanted to say at the outset that TURN is incredibly heartened by the CEC and the CPUC embracing energy efficiency as the first floating order through the Energy Action Plan. And TURN is 110 percent behind this 2006-2008 portfolio process. Our, our interest is strategic energy, energy efficiency investments that are cost effective, verified and sustained, and work within that least cost/best fit framework that you have been developing over the last year or two.

I have to say that it's an incredible privilege for me to be here today. I live in Reno, Nevada, and as a professional in this field for many years, working outside of California, I have turned to California innumerable times for

insight and knowledge and advice, and if I could follow up on what Commissioner Pfannenstiel said about market barriers and we're all a little bit lazy sometimes, I have never found anyone in California lazy, whether it's with your commissions, whether it's with your staff, whether it's with your utilities, the program advisory group, program review group process, has been amazing, for me professionally a challenge to keep up with.

Let me give you a little bit of background on myself. I'm as old as dirt when it comes to this process. I cut my eyeteeth on energy policy and utility regulations with the OPEC oil embargo. That summer, when I graduated from high school, I started sitting in the utility hearings, Utah Power and Light and Mountain Fuel Supply, because I thought they were fun.

I continued to do that for the first four years of my undergraduate degree at the University of Utah. I worked in a variety of ways through the then really strong network that was laid down through the Lyndon Johnson years of the Community Action Association, did a lot of work on lifeline utility rates, helped in a consumer

advocate's office set up in Utah, TURN. At that time, Sylvia Siegal was our mentor and TURN was the first full-fledged consumer advocate office, you know, in the country.

I met up with Amory Levins and Hunter Levins right at that time as well, back when Amory had his top shirt button buttoned all the time and this big bush of hair, and electric typewriters in the Salt Lake Tribune Review office, and Amory would hold little workshops where there'd be just round circles and, you know, there'd be 10, 12 people there.

I immediately could see the power and potential of what Amory's message was of end use analysis for energy efficiency, and that you had to go right to end use analysis of energy efficiency to look at your categories of use of electricity and then the various measures in pieces of equipment and, and appliances, and you had to be able to sort that out and compare that against the, the demand and energy requirements on utility systems, that there is a methodology and a process that would allow you to put energy efficiency in as an equivalent and sustained and verified resource.

In 1982, I moved a little further west to Nevada, and started working with John Wellinghoff and some others when the Nevada Consumer Advocate's office was set up. And that was a tremendous privilege, as well. As you know, John Wellinghoff is being considered as a FERC, our next FERC Commissioner, and working under him was incredibly fast-paced and challenging. I went through the whole PURPA series, rate proceedings on cost of service rate design. Nevada did least cost planning and statute regulation back when it was least cost planning prior to IRP.

In 1990, when my first child was born, I decided to stop working fulltime and stay home, and went into national consulting. That was a wild trip. I worked as a expert witness throughout the country in about 12 or more states for about six, seven years, doing IRP training, IRP procedural -- components, and I evaluated utility resource plans, supply side, demand side, but mostly on demand side, for, for many, many years across the country.

I also ran a, a DOE NACUCA, your National Consumer Advocate Association, IRP training project, and I wrote a manual on it, and

then I'd go into states and evaluate their statutes and, and regulations and what was happening to the utilities.

I dropped out of working during the competition deregulation wave, one, because I didn't get it, I didn't understand how it was going to work, and number two, I had little babies, little children at home and it seemed like a good time to be mom. And I started working with TURN in 2000, when you implemented your public good charge, and it's been a steady increase in, in workload ever since. I've also continued to keep my hand in some regional activities, Nevada energy policy with efficiency in renewables and, and such.

My first slide that's up here, I took the stakeholder perspective of energy efficiency policies from a resource procurement perspective, and I've listed three topics, or three areas that I want to cover with you. And I want to say that the end result of my talk is a homework assignment that TURN is pursuing, which is to get at that undersized investment that you spoke of, Commissioner Geesman, that is related to critical load, which Gene Rodrigues mentioned. And TURN is

working now, just as of last week, with the utilities on realizing what we need to do to take what are some pretty good portfolios in front of us for the '06-'08 period, that address what Commissioner Kennedy mentioned, which is a, we think an over-dominance on lighting and not enough attention to critical load.

Go to my first -- how do I do this, Sheryl? Thank you. Okay. This slide -- and do you have the packets here? Okay. This is a situation you know better than I do, which is the, the reserve margin constraint that you're facing in southern California. It's going from bad to worse in terms of forecast one in two days and forecast one in ten days.

Next slide is northern California. A much better condition here. You have adequate reserve margin requirements throughout the, the period shown here, except you start to dip down maybe 2007-2008, depending on what type of, of critical weather conditions, temperature conditions that you might have.

The point of, of these two slides is when you look at the demand conditions on the electrical infrastructure in California, it's all

about peak electric consumption. Peak electric consumption is the critical feature, and the weak point on your California infrastructure. And I'll just take you to a quick peek at the back of my comments. Not just the, the stakeholders and not just the Commission, but the utilities recognize this, as well. Mr. Fohrer, executive with Southern California Edison, in his GRC testimony for 2006, he talks about how you've got two combined factors. You've got this steady, or -- steady state in per capita consumption in electricity in California, and then you have the increasing penetration of air conditioning use, and what you've got are essentially sort of spiraling or decreasing utility system load factors because of this, this -- peaked condition. And this is evidenced in what's happening with you reserve margins.

The next slide, please. My point here is, number two on page two, if you're following on the handout, that peak consumption is growing more rapidly than average annual consumption, and you have a situation where peak demand's growing at about 2.4 percent and average annual energy consumption's growing at about two percent. And

that may actually be conservative, and data I'm not sure on the peak demand point. I think this is 1999 or 2002 basis.

But this is the start of some analysis I started working on last week, and this shows Edison, PG&E and San Diego's load factors over time, and I haven't been able to get the data response yet from Edison, so I just have one data point that I got over the weekend. But what you see here is a trend where -- and this is without energy efficiency, okay, incorporated in -- what you see here is a trend.

PG&E's load factor's at around 55 percent. They were at 56 percent in 2000, now they're at 55 percent for 2008, so they, they've lost some. San Diego, this is I think huge. They've gone from, you know, about 64 percent load factor in 2000, now they're at 56 percent for 2008.

Next slide. This is from the KEMA-XENERGY potentials analysis, 2003, the 2003 report, they did it 2002-2003. I just love this chart, or, or figure. You don't know how many times I've, I've referenced this and, and returned to this. But this shows the demand systemwide,

statewide, on California. And the, the first little dark area you have up there is residential residual. And then look at the next three. That first tan or brown/gray, that's residential air conditioning load. The white then is commercial air conditioning load, and then that next black bar is commercial interior lighting. Okay.

So what you see there from almost 50 megawatts down to about -- I mean Gigawatts, 50 Gigawatts to about 35, 34 mega -- Gigawatts, that differential, that amount is what is, is driving your system peak. And you've got, you know, you've got a system peak, daily peak from about, you know, it starts really ramping up at 8:00, 9:00 a.m., 10:00 a.m., and goes on until the, you know, through the afternoon. But you've got this really hugely critical area at -- what, what is that -- 2:00 o'clock to 5:00 o'clock.

And one other thing I want you to know about this graph, or this figure. There's no residential lighting load shown here. Residential lighting load is so small in terms of demand on summer days that it's folded into one of the residential miscellaneous categories.

The next, this next chart goes to -- or

slide goes to the two points that I've got on page four, and the first one being that the strategic least cost/best fit end uses from a demand perspective, okay, that's what I'm focusing on, I think that's what's the missing component so far in our 2006-2008 portfolios, from demand component, are those end uses that can increase overall capacity utilization and lower peak loads through the deployment, deployment of low load factor, high critical peak saving measures.

Now, I wish I could say that I made up that language, but it is from the, the Commission's, the CPUC's energy efficiency policy manual, policy rule number 2.5, and it directs the program administrators to develop portfolios for 2006-2008 that demonstrate that they will aggressively increase overall capacity utilization and lower peak loads through the employment of low load factor/high critical peak savings measures. Okay.

And so what I've shown here is end use equivalent load factors. Now, I have some of this data in my office where I've calculated it specifically for each utility across the end uses and measures, and so over the weekend I just did

a, a really rough aggregation of this. But what I want you to see is that residential space cooling is, has a very, very low load factor, okay, and it's, it's highly coincident with system peak. Commercial space cooling starts to be a little bit broader at 30 percent. Then you see residential lighting, commercial lighting in the 60 to 50 percent range, which then if you go back to those load factors that I had for you from the utilities, you know, where we've got 50, 55 percent system load factor, you see that residential lighting and commercial lighting are right in with the system load factors.

And the commercial space cooling starts to be one of those low load factor critical use end uses, but residential space cooling is, is right on the money in terms of the Commission's definition in the policy rule.

No, not yet. Thank you. And, and then the peak demand savings potential, this is from the KEMA-XENERGY potential study, and the residential space cooling and the residential lighting, those ranges of 55 to 67 percent and 11 to 17 percent of savings potential by those customer categories, those are utility specific,

and then the commercial space cooling and commercial lighting, that's system-wide data that, that KEMA-XENERGY calculated.

So that is, I've gotten you through my first section, the demand conditions on the electrical infrastructure. Now, with our hat on as energy efficiency policies from an IRP perspective, I want to take you to my second section, which begins on page 5, and I want to give you a quick overview of the California electric IOU portfolios, some proposed portfolios that are filed on June 1st. And I want to give you a perspective on those portfolios as a procured resource. Okay.

And the first item here is, addresses a risk assessment of projected savings, and that's the utility's projected savings to what I've called likely to occur, or verified and retained savings. And you've seen lots of data this morning showing that the utilities' projected savings are going to exceed target and the utilities have, you know, a, a margin of error in not only their Gigawatt but their megawatt hours of projected savings above target.

And if you go down the chart that I have

there to right below the heading bold line, where it says percent of target, and working left to right, with PG&E, for example, they're projecting over the three years to be at, you know, 105 percent of their annual energy target, and only 90 percent of their megawatt target.

As you go right, look to the right, Edison brings that up a bit. They're shooting about five percent above target with Gigawatt hours and megawatts. And then San Diego really, really takes it high with a, a protected margin there of, you know, 120, 130 percent.

Now, I have done a sensitivity, and this sensitivity also is in the, the program review reports of the, the program review groups, the PRG reports for Edison and PG&E, because I'm, TURN is a PRG member on that, and I developed this and presented it to my fellow PRG members. They adopted it, and endorsed it in those two reports.

And then what I've done here is I've carried that analysis on over to San Diego. I was not on the San Diego PRG. And let me tell you what I've done. I, this is a fairly conservative risk assessment. One big adjustment on demand and one big adjustment on energy. The one big

adjustment on demand is that the utilities counted their projected residential lighting savings as demand savings, peak demand savings. Okay. I interpret the Commission's targets on energy and demand to be a peak demand number. Okay.

The utilities are interpreting it differently, and this is not a blame game at all. This is, this is more, more -- this is, this is homework that you need to give us to, to get this straightened out, and fast.

But anyway, if we're talking about this as procured resource, you do not count residential lighting as peak demand savings. If you go back to that chart on page 3, item number 3, that I, I just love this, I can't even remember the first time I saw one of these. I mean, it was years ago, I said oh, boy, somebody's done the analysis and got the end use data plotted out.

Anyway, remember, residential lighting is not coincident with your, your summer daily peak in any significant way. You do have a lot of residential energy, kilowatt hours, in lighting, but it's, it's largely off peak. And Bill Pennington was the one that brought the data to the table from the CEC report or study analysis, I

think from 2002, that finds that only about 10 percent of residential lighting is coincident with your peak period.

So the first adjustment, going back to this chart, the first adjustment, and these are the, the two red boxes and then the gold or yellow box, is I netted out the residential -- I netted out 90 percent of the residential lighting savings from the projected peak demands, okay. And you can, you can see what it does. It takes all of the utilities down below target, and I don't know how I did this, but all three of those boxes really should be red, because sitting her this morning going over some numbers, the, the 94 percent, that's supposed to be 44 percent.

And so what I will do is get a corrected copy of this, and I'll explain in a minute why for San Diego do they go from 130 percent coverage down to 34 percent when you take out residential lighting. Well, I'll go ahead and tell you why. Why hold a secret, right?

It's because half of their total portfolio is screw-in CFLs. Half. And all of the CFLs are attributed to the residential class. We're going to talk about that in a minute.

Then I did a conservative adjustment on the Gigawatt hours and it has to do with the net to gross ratios. I think Gene and maybe Mike Messenger referred to that we've got old and outdated net to gross ratios, and yes, the tech market works report demonstrates that when you conduct a sensitivity of using more realistic net to gross ratios, it, the utilities are still in the ballpark on cost effectiveness, and that's great. But I dropped the net to gross ratios just ever so slightly. I took them down to 75 percent, and they're at 80 percent right now for residential and almost 100 percent, 96 percent in the commercial class, and I've got that explained here and it's also in the record in TURN's June 1st -- June 30th comments.

But you can see what it does on, on the energy targets. And I'm much less concerned about that on the energy targets than I am about what happens to the, the peak demand. And I'm not saying that we've got to resolve what net to gross ratio to use, but because we have portfolios that are highly dominated by lighting, because lighting has been a measure, particularly in CFLs that have been heavily marketed, heavily incented in

California, it's really critical from a risk assessment, if you want to be dealing this as a procured resource, to be really careful about some of these underlying variables.

There's other variables here pertaining to the, the lighting estimates that, that should be looked at, as well. And it's all, all part of a lot of discussion in the, the PRG groups.

This next chart takes you to, then, adding in the effect of the utilities' energy efficiency programs to their load factors. And this is data from PG&E and San Diego, and I haven't gotten the data from Edison yet, and when I do I'd like to be able to get that to you.

So go to PG&E and there's the without energy efficiency, and you see in the far right-hand column that the percentage change to their load factor is negligible for the last eight years. It goes down by six-tenths of a percent. Now, this is really striking. With energy efficiency, PG&E's load factor is going to go from say 52 percent in 2004 down to 45 percent in 2008. It's going to drop 12 percent with energy efficiency. We are eroding system load factors with the current proposed portfolios.

And then with, with San Diego, there's not as much as of a, of a differential. Their load factor, you know, their load factor really drops without energy efficiency by 7 percent. Then with energy efficiency, it'll drop by another, another one percent, .8 percent.

So I really am interested in getting my hands on the Edison data to, to see where Edison is going overall with load factor over time, and then what happens with their portfolio with energy efficiency.

The next slide is, addresses how the utilities' portfolios are balanced on two end use categories, space cooling and lighting, relative to the potentials, the potential analysis of KEMA-XENERGY from 2002 to 2008. And this is, this is very interesting to me from the perspective of the Commission's directives of we're going dig broad and we're going to dig deep. Okay. No stone unturned, we're going to get everything on the table in the state of California that's cost effective.

And so if this was a treasure hunt, you'd say well, I'm going to head off in the directions where I know that there is -- well, I

could say, coming from Nevada, the mining state, you're going to go where you think there is mine-able resource and you're going to dig there, and you're going to hope to go broad and deep there versus going off on, you know, a vein that maybe doesn't have much pay-out.

So PG&E, Edison and San Diego, the first column, two columns, are the savings potentials out of KEMA-XENERGY, and then the next two columns are what the two are proposing. And what we have going on here is really like a, a flip-flop, or an inverse of what I think needs to have happen.

I'm going to focus on residential, because even though there's imbalances with commercial in terms of where the potential is and what the utilities' proposed emphasis is, it's not near, it's not quite -- well, it's, it's not bad. And the, the really dramatic imbalances is in the residential category.

With, with space cooling, the first category with PG&E, KEMA-XENERGY said 55 percent of the residential category savings -- and remember, again, residential is a significant portion of the savings -- 55 percent of those demand savings are to be had in space cooling.

Now, PG&E has said we're going to get 7 percent of our residential category savings out of space cooling. KEMA-XENERGY said less than 20 percent of residential category savings are in lighting. PG&E is saying we're going to get almost 90 percent of our residential category's demand savings in lighting. And, and the trend goes on down.

It's striking to me that of the potentials by residential category, that San Diego has the largest potential, percentage potential at almost 70 percent, and they have the, the smallest projected savings at, at one percent.

The next, this slide addresses the screw-in CFLs as a percentage of the utilities' proposed portfolios. And these, the percentages shown here for megawatt and Gigawatt hour, are the percentage of savings in the entire portfolio, total portfolio, that are projected or, or proposed from screw-in CFLs.

And so here, here this is where you see that data of why does, why does San Diego go from, you know, 130 percent coverage on their demand margin, demand forecast of projected, why do they then drop down to 44 percent. Well, it's because

half of their portfolio is screw-in CFLs. And I am not anti-screw-in CFL. I have screw-in CFLs in my house, in my office. I also have a stack in my laundry room full of -- not full, but with a handful of CFLs that I have taken out, CFLs that have not fit, and I go through periodic waves where I decide I'm going to have every light bulb in my house just the highest efficiency. I go out and buy them, I get them installed, and then there's this gradual movement of many of them being unscrewed, or replaced back with incandescents, because of color quality and, and brightness.

So CFLs are wonderful, but they're a different type of resource than, say, a refrigerator or a motor, or even an air conditioner. You have a lot of uncertainties with persistence, with retention, and then even with just hours of operation it's a really, it's a real conundrum to try and get good data on hours of operation. When somebody takes a CFL home are they putting it in a closet, or are they putting it in, you know, the bathroom? So, so this, this, in terms of my, my background and training of energy efficiency as an equivalent and comparable

resource to offset supply side resources raise, raises a flag.

And my last section is some policy observations. And the first one I just mentioned is that I think that we have a, a huge risk in planning for peak reserves right now, and that, that if we're going to do it through energy efficiency we need to address that risk and, and manage that.

The, the second point is that providing for infrastructure for these high peaks that swing by 60 percent is a huge economic hardship on ratepayers in the state, and this is where I've got Mr. Foyer's quote from Edison's GRC.

The, the next point on number three, on page 8, that further erosion of already creating utility system load factors through ratepayer financed energy efficiency is bad policy, that's obvious.

The next point, allowing critical peak load to go virtually unchecked ensures that not only system infrastructure costs will continue to spiral upwards, but that the residential customers will bear the brunt of cost responsibility. And this is where I want to conclude with just a

thought, not so much about economic efficiency, but also about distributional equity.

When we talk about distributional equity we largely focus on, you know, if you have X number of good charge firms and dollars, the residential class should get so many and the commercial class should get so many. That's not the distributional equity I'm talking about here. Distributional equity here is that all customers should be afforded the opportunity to reduce their contribution to the utility procurement costs through energy efficiency programs and activities. And failure to do so means that, in this situation of California, where you have critical peak growing more rapidly than baseload consumption, and you have portfolios that evidenced by San Diego is worsening that not great load factor, and then by PG&E taking a not great load factor and, and really stripping it out, and then with Edison we don't know where we are yet, the residential class is going to pay for this.

They're going to continue to have that load that Mr. Foyer in the, the GRC spoke of, which is they're going to continue to have this steady state on energy per capita consumption,

we're going to continue to have these, these little peaks.

Thank you, and I didn't look at the clock and how long I talked, and I apologize.

PRESIDING MEMBER GEESMAN: No, you've done fine. I want to thank you very much for your comments. I, I did have a couple of questions on your load factor data.

Do you know, have those numbers been temperature normalized?

MS. MITCHELL: I don't know. I, I will, I'll send a follow-up data request to the PG&E and, and San Diego and ask them that.

PRESIDING MEMBER GEESMAN: And did you have any earlier than 2000 load data, load factor data?

MS. MITCHELL: No, but I, I would think we could plot that in there.

PRESIDING MEMBER GEESMAN: I, I'd be interested in anything that you were able to come up with here.

MS. MITCHELL: Okay.

PRESIDING MEMBER GEESMAN: I, I've asked our staff to take a look at it, and it's a remarkably complex question from their standpoint,

but I'd be very interested in --

MS. MITCHELL: Where do you want it to go back to? Do you want 1990?

PRESIDING MEMBER GEESMAN: If, if it could be, if it could be gotten in 1990.

MS. MITCHELL: Okay.

PRESIDING MEMBER GEESMAN: I'd also like a consistent temperature normalization if that's possible, as well.

MS. MITCHELL: Okay.

PRESIDING MEMBER GEESMAN: I, I will say I think the general direction --

MS. MITCHELL: That's a good point.

PRESIDING MEMBER GEESMAN: -- of the line that you're drawing is, is very plausible. Our early data shows it jumps around a lot, and I don't want to bias it one way or the other with, with a temperature normalization that's not consistently applied --

MS. MITCHELL: Well, I do have -- the data that I used here is, I do have an annual. And I just tried to pick, you know, drew points. But yes, when you look at the annual for the two utilities that I have, you know, bumps around.

PRESIDING MEMBER GEESMAN: I'd

appreciate it very much.

MS. MITCHELL: Okay.

PRESIDING MEMBER GEESMAN: Thank you.

COMMISSIONER PFANNENSTIEL: Your, your concern with the peaks and the critical peaks, and specifically the needle peaks, is, of course, something we all share.

And, and you're looking at this all from an energy efficiency standpoint. Do you, what is you feeling about demand response programs, then, that would be specifically designed to address those needle peaks?

MS. MITCHELL: I, I think they're great. I think certain energy efficiency changes categories and certain energy efficiency measures even have an edge on demand response. For example, residential air conditioning load, if you make that more efficient, then when -- if it has a load factor of 10 percent, very, very small, very coincident with peak, it's almost like a demand response resource, but even better in terms of it'll keep being there again and again and again. You won't even have to call on it.

The other thing about that for residential air conditioning load is that class,

that customer class, as you know from the demand response proceedings and workshops, that one's a harder one to bring demand response technologies down to that customer class in an economic basis. So if we went after, as a homework assignment, critical load, and I think you can do -- I think you're absolutely on the right track with demand response for your larger customer loads, and I think there is a time and place to start bringing that into the residential class, as well. Okay.

But take residential air conditioning load and say we're going to make that our equivalent demand response with a, a higher level of certainty and possibly a lower overall cost than what you have to buy demand response in commercial/industrial.

COMMISSIONER PFANNENSTIEL: Thank you.

COMMISSIONER ROSENFELD: And I'll make a comment on that. I, I don't see that as alternatives. Clearly, if it pays to go into a SEER 13 instead of a SEER 12, which the courts say it does, we, we should do that. And in this state it probably pays to IEERs at high temperatures. That's assuming the customer always keeps his or her house at 72 degrees.

Demand response is, is often something different. It says 99 percent of the time we'll go in for efficiency, but one percent of the time when the system is stressed, we'll go buy a little discomfort from you to keep the lights on. And I, I just don't see that they fit in the same economics, and I don't see how you, why you don't want to do both.

MS. MITCHELL: I don't mind doing both, because I harken back to what was the precursor to demand response, which was -- well, in the residential class, which was air conditioning load management or conditioning cycling. Same, same concept. I, I don't have a problem with doing both.

My limited understanding of demand response, moving it down to the residential sector, has been that the relative economics in terms of the cost of the meters relative to the load availability to do the demand response, demand response of price -- it's my understanding from TURN that there's a, that they think that there's a, a disconnect there. So I have not been involved in that aspect of demand response in California.

But I'm fully supportive of load interruption of residential air conditioning loads as, as another tool in the tool kit. I think what's desperately needed, though, in the residential sector is to bring down all of residential load by a big chunk, the air conditioned load, and, and have that on a sustained and verified basis. And that, you know, thank goodness for the new SEER 13s. What we need to do next is get on with code compliance and get some aggressive utility intervention programs on the quality installation.

One of the things that we're finding in California in the last two years is that maybe only half of all your air conditioning units are operating at their nameplate efficiency. The, the rampant problems with air conditioners running improperly and, and creating more needle peaking because they're not charged properly, they don't have proper air flow, and then the biggest, biggest one being the, I understand, the, the ducting, the need to do, to seal that is what I think is homework, you know, we, we should be going right away, at least in the energy efficiency proceedings.

COMMISSIONER ROSENFELD: I have one other question about -- I'm a little surprised today, we keep talking about saving energy and saving peak as two separate goals. And some years ago we invented time dependent valuation of electricity, which I thought was supposed to solve that problem so that we, we actually get higher prices to peak times. And then we have a one parameter theory that we, we go out and, as far out to the conservation and supply curve, this would make sense.

I, I'm a little surprised. This, this may be a question to both you and to Sheryl. The, the word time dependent valuation just hasn't come up today at all as a solution to how you compromise between peak and energy. Does either of you have a comment on that?

MS. MITCHELL: There's, there's two or three matters that I think the, the stakeholders and the utilities and the CEC and CPUC staff have as priorities, tweaks that really need to be straightened out. And one of them has to do with the time dependent avoided cost that we have.

What you've done in the last couple of years with moving from average avoided cost to

time dependent avoided cost is huge, and the E3 calculator and the E3 methodology is great. What we're finding, though, and it's interesting because you have, you know, a procedure, and we, we set, we go through very substantive categories sort of theoretically, and then we go into an application, and then now we're finding with the avoided cost that we need to, to come back to it. Because what's happening, it, it's capturing and, and correctly evaluating about 90 percent of what's out there, but our avoided cost time dependent method, and then the E3 calculator was never designed, nor was it intended to reflect, first off, the cost to society of additives and the societal cost of reliability, that's just not on the, the radar screen. Okay.

So with demand response pricing, I assume that you're using something that goes higher than the avoided costs that we're working with in energy efficiency, okay. Well, residential air conditioning, it has such a narrow load factor, such a small load factor that it almost gets, it gets thrown out, too, of the model. And you take a, you take a, a CFL light bulb, and you take residential air conditioning

efficiency, and you run the TRC test on them, and I'd be glad to give you a, a short handout that we have that was developed out of the PAG and PRG reports with PG&E on this.

This is actually PG&E's own data that shows when you run the E3 calculator on those two measures, air conditioning has a, a small but passable TRC, and the lighting is huge. Okay. So it's, you know, three, 3.30 TRC. And then we have, in terms of the energy policy manual and the EM&V protocols, we have right now what is really a two dimensional performance metric. It's, we have net benefits and energy targets, okay. And the ratio between the, the demand and energy targets are such that it's really more just energy targets than demand targets. And we've talked about some various ways to, to fix that.

So, we have an avoided cost methodology that doesn't give full valuation to reliability, and then what I'll call really super peak, critical peak costs, okay. It's just outside of the bounds of, of the model. Then we have performance metrics that are largely two dimensional, net, net benefits, the TRC ratio, and the energy targets. And then we have these big

energy targets.

The utilities have -- this, this has, and I don't want to speak for them, but I, I hope I'm correct to say that this has largely driven them to going after portfolios that are, A, the most cost effective, and then, B, energy dominated. And so when Commissioner Geesman spoke of the under-sized, that maybe we've under-sized the investment, I think that we have relative to critical load.

MS. CARTER: Just to add a little bit to that. I mean, the model obviously needs tweaking, and Gene brought up, mentioned of, you know, extra credit for critical -- pricing that's being discussed. But we should be really -- this is another balance issue, again. We should be really careful not to discount the value of overall demand savings as well, because while critical peak, while the peak is extremely important and I share the concern over managing it, so are the, the long term energy savings and demand savings.

And we are going to need new baseload power as well, that's a couple of years further out than the peak power, but it is a very real, you know, looming need. And we're looking at

some, you know, pretty potentially dirty technologies out there to fill that need, and the more energy efficiency can supplant that, the better for California and for the country.

So again, this is, I want to stress this is another one of those balance issues that we need to be careful not to throw out one piece and go in the other extreme.

PRESIDING MEMBER GEESMAN: I think that's a good point, and certainly to the extent that many of our programs over the longer term are oriented to reduction of greenhouse gases, it's, I think, a fairly compelling point. But we've been so preoccupied by very severe operational problems in the last several years that we've fixated on the peak. How would you strike the balance?

MS. CARTER: Well, I think continuing to look at, you know, demand savings, megawatt savings, the way that, that the utilities have, but also include instead of throwing that measure out and, and replacing it with Cynthia's analysis, just look at that in addition. And, and really take into account, I think the extra credit, you know, issue that, that I think Gene and, and the utilities and, and Karen and, and the CEC are

discussing, is a real interesting one. And you can do something like that without getting rid of the value from the other types of programs at the same time.

PRESIDING MEMBER GEESMAN: Bill.

MR. PENNINGTON: Thank you. I wanted to respond to Art's question about why isn't TDV causing us to get the right answers here. And, and I personally think that there are glitches in the goal reporting, or reporting against goal rules that have been set for the utilities that are causing that problem and are overpowering the TC avoided costs calculations.

And I think there needs to be more work. I, I think it's a very important problem to, to resolve. I'm seeing, I'm seeing measures related to residential air conditioning that intuitively ought, ought to be getting high priority within the programs that are finding it difficult to demonstrate cost effectiveness, both the -- overcoming the really problematic implementation problems of residential air conditioners that Cynthia mentioned, and also seeing residential new construction programs struggling to be able to demonstrate cost effectiveness even when they're

getting good savings on peak is a dilemma. I don't, you know, there's something broken, I think, with the calculus.

COMMISSIONER PFANNENSTIEL; So this is a modeling issue? This is a, a time dependent valuation modeling issue? Is that what we're --

MR. PENNINGTON: No, I don't, I don't believe that the avoided costs are the problem. I, I think instead there's other reporting against goals rules kinds of problems that are --

MS. MITCHELL: That's really the, the first threshold issue, and Mike Messenger's the one to discuss that with more, or Pennington, and then sort of the secondary issue is what we're seeing in the avoided cost. And as Gene had mentioned, I think there is the need to -- between the goals, the targets and the avoided cost, to say wait a minute, our performance metrics right now are just two dimensional and we have much more of a three dimensional or multi-dimensional. And one of the things that TURN has recommended is that we add in a, a metric of critical peak.

COMMISSIONER PFANNENSTIEL: Gene.

MR. RODRIGUES: Yes. This is an issue that we've all in the energy efficiency community

been grappling with for quite a while now, and I think it's a very interesting and important issue. I would suggest there are really two things you need to look at.

The first is I wouldn't characterize it as a, a modeling problem. It's really a question of recognizing the limitations of different kinds of modeling. Don't let the numbers tell you what to do. Use numbers so that you can exercise judgment and exercise it wisely. And in that regard, there is a second issue here that you need to look at as well.

Sometimes we get caught up in the percentages, here's the potential and here's the amount of activity in the market, in today's case talking about HVAC. Well, one of the things we have to recognize is, is outside of this sort of exercise there's a real world outside, and the real world tells you also that convincing residential consumers to switch out pad mounted air conditioners is not something that they're willing to do, you know, on a just right now basis. It creates a significant need for capital investment on their part. Quite frankly, the, the penciled out benefit to the residential consumer

isn't as appealing to them as other strategies which, which tend to attack the air conditioning market when the consumer is really ready to make a change, which is usually at a point in time when you've got either a contractor there for a tune-up, and/or the air conditioner needs to change.

Then the final thing along the lines of kind of that, that real world look at how much can be done. Honestly, what we ought to be looking at isn't potential or economic potential or technical potential. It's, it's whatever the maximum reliably achievable potential is, and that takes an exercise of judgment, as well, as to what you can really get in the marketplace.

But, but, long story short, be careful that when we do the analysis and look at the numbers, it's not just that we're not just driven by the numbers, but understand that energy efficiency has a part within a larger portfolio, which is what one of the things that I think that Sheryl was trying to point out as well, and Art's question definitely went to, which is when you look at how to attack the residential air conditioning market in the state of California, you must look to demand response programs and

energy efficiency programs working side by side and together.

MS. MITCHELL: I, I appreciate and agree very much with what Gene is saying, and I wanted to, before we break for lunch, make sure that we're clear on a few things.

I am not advocating, nor is TURN advocating that we go from a energy based portfolio to a critical peak portfolio, and I wanted to focus today on what are the, you know, the critical demand conditions on, on your infrastructure. Sheryl's point about generation down the line being baseload, I agree with that as well. When you look at total cost, the, the largest cost that California over the next, say, five and ten years, is going to face with incremental infrastructure is in, it's my understanding, distribution and transmission, then generation, because your infrastructure is sized to peak and we've got growth of existing load and then infilling of new load within your urban areas, and you're going to have to go back and push distribution and transmission out.

The other thing is that to go after the baseload we need to be focusing on some of the

8,760 hour efficiency opportunities, and that gets very much at the residential and construction market which Bill Pennington brought up, which is falling out. Also, at the vampire loads that Bill Pennington brought up, those are the hospital and such, computer electronic loads that are on, you know, 24/7. The problem with saying in your mind that, you know, residential and commercial lighting is going to knock out baseload, remember that the load factors on, on those are about 50 percent, so you, you're only halfway there. You're getting at incremental load, you're not getting at your baseload. So we're still not there on where we need to be in terms of avoiding those, those baseload pollutants.

What Gene said about HVAC, I agree with completely. I would never advocate an HVAC program where you're knocking on doors trying to get people to change out their particular air conditioning unit while it was still, still running. California has 600,000 central air conditioning units sold into its market annually. When you're at the SEER 10 to a SEER 13, you're looking at a one to two kilowatt peaker unit being, being moved into the market with each one

of those, those units.

Now with the SEER 13 standard, that's great. We need to do two things. We need to make sure that consumers that are in an income pinch are not holding on to their old dogs, okay. But, so we need to find some inducement to go ahead and get those units changed out when they're at the end of their useful life, maybe through financing programs, bill financing versus rebates, when then also gets at one of the largest areas that you mentioned, Commissioner, that's just huge.

I mean, we, you know, we obviously have more opportunities than we have dollars, so how can we leverage those dollars further. One is to what Bill talked about with the codes and standards. The next is to move away from, you know, cash rebate incentives to, to financing. We, I hate to say it, we're a credit card society. What, what we need to do with those 600,000 air conditioning units is the financing so that people don't hold on to a dog.

But we need to have an immediate statewide comprehensive program that adds a value to those new SEER 13 units, and the value would be a quality installation and duct sealing program,

okay. You train the contractors, but more importantly, what was never done in this state, is give the contractor the incentive. HVAC contractors are paid on a per project basis. They don't get to charge, you know, the, the hourly wages of electricians and plumbers. The reason why you never get an air conditioning unit properly installed or running in this state is because you, you go in, you go out as quickly as possible. The California new compliance standard is, is estimated to have about a 25 percent response or compliance rate unless we -- well, but that, that's what you're going to be getting. You're going to get 25 percent of your 600,000 one to KW units a year installed properly unless we get active and aggressive utility intervention.

MS. WAGNER: Hi. My name is Patty Wagner, and I'm the Director for Energy Efficiency and Demand Response at San Diego Gas and Electric, and also for Energy Efficiency at SoCalGas. I just wanted to make a couple of comments to make sure that you weren't left with the impression that we were ignoring HVAC in San Diego.

I'd like to encourage you, Cynthia, to take a look at our third party solicitation. I

think most of you know that what we have filed so far is 80 percent of our portfolio. We've also identified there's 20 percent of our portfolio that will go out to third party bid. And of that 20 percent we've allowed space for innovation, but we've also allowed, we've also identified targeted areas. And based on all of the things that Gene mentioned about the difficulties in the HVAC market, we've had a lot of lengthy discussions at our PAG, and we decided this is something a third party might do better than San Diego Gas and Electric. So we've included that as a targeted opportunity in our third party bid. So we're not excluding it.

One other comment I wanted to make. When you look at San Diego's service territory, we have 140,000 air conditioners that are in the inland sun where people are actually using them. The other 200 plus, about 215,000, they're on the coastal zones, and like Gene said, those people are not going to be replacing those air conditioning units anytime soon. So we are addressing those particular customers with our demand response program, because we believe they are good candidates for cycling off during peak

times.

So, just wanted to let you know we're not excluding it, and I think when you see the final portfolio once the bids are in, you'll see a little bit different picture in San Diego.

MS. MITCHELL: Thank you for that. And what I'd like to be able to do is I will pull those specifically and add that as footnotes to this, and I'll also include a footnote that clarifies that the data that I am citing here on the end use analysis is for your total portfolio, and it's my understanding that you've incorporated all the savings that you project to achieve from third party as well as IOUs. So that already has incorporation what you're estimating or guesstimating to achieve in HVAC versus, versus lighting.

I, I think we're talking the same issue from, from different directions. And I understand that San Diego does have a relatively low air conditioning load compared to on the other two -- the other thing that I'll do is the -- energy number where I showed that they, for their residential category, project out 67 percent of the potential will be from HVAC, I'll put the

numeric values in there as well, so the Commission can see the actual megawatt amount that, that -- megawatt amount of, of HVAC savings.

PRESIDING MEMBER GEESMAN: Does anybody in the audience feel that we shouldn't go to lunch?

COMMISSIONER PFANNENSTIEL: If you, if you value your life.

(Laughter.)

PRESIDING MEMBER GEESMAN: Yeah, why don't we come back at 2:30.

(Thereupon, the luncheon recess was taken.)

AFTERNOON SESSION

PRESIDING MEMBER GEESMAN: Let's go back on the record and reconvene.

MR. PRUSNEK: Do you, do you want me as the moderator to make a brief comment?

PRESIDING MEMBER GEESMAN: Absolutely. Jump right in to Panel Two.

MR. PRUSNEK: Okay. Did everybody get their handouts?

The second panel is going to be on the topic of suggestions for program improvement, something that, that I know we at the CPUC are constantly looking to do, and I know the CEC, through the IEP -- IEPR will be proposing some suggestions even back to the CPUC.

So looking forward to this, because as you know, we constantly are -- we're not perfect, we're constantly trying to better our successful programs -- 95 percent perfect.

So, just some ground rules for this second panel. We want to keep the presentations to about ten minutes. Make brief intros to yourself, but keep those short. And then we're going to try to engage and do some lively Q and A after all the presentations.

If you can, hold your comments until afterwards, but if you feel the need to make a question in the middle, go right ahead.

With that, we'll introduce Bill Boyce, from Sacramento Municipal Utility District.

MR. BOYCE: Hello. I'm filling in today for Jim Parks as the Acting Manager of SMUD's Energy Efficiency Research Group.

I'm going to start off with a couple of charts that maybe address a little bit of the issues from this morning, and then we'll power through some other stuff and get to the lessons learned and some of the recommendations we've had.

Going over our 30-year history, and I just kind of wanted to show this chart to show that some interesting things have happened in SMUD's energy efficiency program over the years. Namely, in 1990, shutting down Rancho Seco really necessitated us getting into a large energy efficiency program and taking that on up to AB 1890, where things basically were starting to get pared down in order for the deregulation movement. And since that point in time, things have been slowly creeping back up. But it shows you what can be done when, when you have to.

Overall, that was fed by General Manager David Freeman. Conservation power plant philosophy when we were trying to meet 100 percent of the load of the 913 megawatts, to date we've only gotten about a third of that way, but it shows you that, you know, significant things can be done. The other factor that kind of feeds in, it was primarily done through capital expenditures at that time, and emphasis was on KW versus KWH.

Transition towards AB 1890 primarily was taking a look at the competitive pressures, and, and one of the things we like to look at there is our overall spending has been a little bit more than the state requirements, 3.7 percent of '94 revenues. And energy efficiency itself has averaged 2.6 whole for EE on a stand-alone basis. But in taking a look at regulatory compliance towards goals, internally the philosophy pretty much shifted away from KW towards KWH.

I bring this up with regards to the modern proceedings that SMUD has been following, the joint CEC/PUC proceeding, very closely. Commissioner Kennedy send a letter to our general manager, Jan Schori, very early on, asking for our support, and we've been supporting it ever since.

And primarily, the three proceedings that you see there are what we've been attending.

Primarily, right now we're showing a lot of interest in the M&E portion to make sure that our accounting processes for energy efficiency match up with what the state is developing now. We did sign on to the NRDC proposal. Some of the other areas that are somewhat related with regards to climate change, we're very strong supporters of climate change. Jan herself is supporting the advisory group meeting over at the Energy Commission today. And also, along with some of the other state initiatives, we have recently performed our own advance metering infrastructure study and business case analysis. So we're pretty much up to speed with what's been going on and the bigger picture.

Our program philosophy, and getting into what we have seen works. Basically, from our perspective, we have to support our board policies. I have a whole 'nother presentation on that that we won't get to today, but suffice it to say there's about seven key board policies, key of which includes, you know, competitive rates, customer satisfaction, environmental protection.

One of the other ones we're very proud of is we actually have a RD&D policy to support our RD&D, recognizing its importance in the overall mix of having a robust energy efficiency program.

Obviously, the munis' benefits to customer classes are very important, and we always strive for high customer satisfaction.

Market transformation for us, we recognize that being small we really cannot affect that, and so we do a lot of partnerships at the regional and national levels. As mentioned earlier today, work with CEE. We also work with Energy Star to try to affect that to project a larger impact in bringing that back to Sacramento, then to get the benefits.

What programs have excelled. I just kind of want to show these. A lot of these are talking more about hard to reach customers, more customer focused than metric focused I think is the overall message here.

What have we learned? I think what we've learned really, going back to that 1990 ramp up in energy efficiencies, if your board and, and senior management want things to happen, they can make it happen. So having very strong executive

management and public support are very, you know, very very important in setting that tone and philosophy.

One of the other things, flexibility to meet customer needs. Now, there has been a downside to flexibility that we've found is if we ramp and down incentive levels on certain programs during the year, we lose basic cognizance with the contractor community and, and some of the third parties that we use, so they don't really know what's going on. So we like to have flexibility with programs, but we've got to show some constraint.

One of the other things more on a local level, I think Gene kind of talked about the need to have localized energy efficiency partnerships. And one of the things we've really strove to do on our more successful programs is getting all the stakeholders involved in the community, from the retailers, the contractors, manufacturers, all those types, getting them together collectively have made for the best, strongest programs.

We've already talked about working with the regional and national efforts. The other one I want to put here, strong RD&D. We really use a

lot of RD&D to basically develop new technologies, take a little bit more risk, also research the technologies to make sure they're of good quality before we start incentivizing them in our programs.

We've worked on a lot of program linkage of when can we transition technology from an RD&D sense into a program, and it, it doesn't necessarily sound tough to do that, but knowing what the proper maturity level is before you transfer the technology into the program is very much key.

Cover a couple of things that we have down that haven't worked. I talked about the changing incentive levels. I talked about RD&D being important. We have had instances where poor quality product and poor contractor quality have been damaging to the programs. I think one of our programs had a bad batch of CFLs one year, and basically we got a lot of customer push-back on that.

One of the aspects of a muni, we're, we're fairly flat and any sort of complaints typically get back to our board, and we get phone calls pretty much directly right away to deal with

issues. So that comes with prompt decision-making and flexibility to deal with the problems.

Upcoming challenges. Obviously, as everybody's struggling here, surpassing the Title 24 standards. Incorporating environmental value streams into the programs. And I, I talked about climate change, criteria pollutants, also energy security. We see some things coming down the road that are actually more shift away from fossil fuels to electricity will be, you know, making it harder to make some of those energy reductions across the board. Maintaining local control, once again, to support our customers. And then addressing the goals which we have now.

Summary, and then I want to get into a couple of quick issues that are based off of some of the dialogue this morning.

We've been a strong supporter of energy efficiency by choice. Even by choice, we've chosen to exceed the state requirements, particularly from AB 1890. We really strive for customer satisfaction in all our programs. We really beef up our community environmental protection, and an example of that is criteria pollutant reduction. Myself, I carry a personal

commitment for my yearly evaluation to reduce NOx emissions in the Sacramento area by 20,000 pounds. And various staff members throughout the district, you know, carry personal goals for their community that we feel make a strong difference.

And the last board up there. We've been very selective in participating in those regional and national market transformation efforts across the country to have a larger impact.

Some of the things I noticed from this morning, I'll bring up, outside of the regional and national efforts.

Transition to the new technologies I think is going to be important here. At SMUD, we've been really trying to take a look more at the HVAC technologies. In an RD&D sense we probably are trying out about four different technologies currently right now. Some of the other technologies we've gotten to, such as system tuning, actually our project is to take a look to make sure that can we develop a red/green status light to let a homeowner know that his HVAC is operating within the proper boundaries, so they have a quick check where they can monitor their, their energy usage themselves. Are they in the

sweet spot.

The RD&D policy itself I think is also very important, and the fact that our board has noticed how much of a strong player RD&D will be in making those goals happen over the next decade.

So from that aspect, I think, you know, trying to have a, a robust program all the way across the board, trying to meet the customer needs, and, once again, customer satisfaction is the, the one thing that we strive for more on a different sense, versus necessarily focusing on metrics.

MR. PRUSNEK: Thank you, Bill. Is there any questions for Bill?

Okay. I, I have some, but I'll hold them off until all the panelists have completed.

The next panelist is Wally McGuire, from Flex Your Power.

MR. McGUIRE: Well, thank you. Thank you for the opportunity to be here today.

In an attempt to keep it short, what I'll do is try to summarize some of my main points and not get into the specifics, presuming that there'll be a discussion later on.

The first question that was posed to

the, to the panelists was review of recent results from utility and agency sponsored programs. That triggers two of what I think are the most important points I could make, and one of them is a full discussion, which has been discussed a lot today, on the home measurement evaluation. I understand how critical it is, particularly if you're rewarding the utilities for saving energy, and I'm totally supportive of it.

But I, I really believe on most programs that the, we've basically put form over substance, to be honest with you. If, if you can't count it, then the utilities are penalized, quite frankly, from spending many resources on it, and you create an artificial competition between, for instance, the rebate program, which you can count, and marketing and outreach or the Pacific Energy Center, something like that, which you can't count exactly. So, so there seems to be, and, in fact, I think it was in tech market, whatever it was, report, that since you can't measure it, maybe you ought not to fund it.

I think that's crazy. I mean, it seems to me that, that we ought to start with programs that, you know, have a, a different kind of a

valuation, possibly, to it. And I think that goes back to what I believe is we, we call a lot of the programs resource programs, indicating that they're actually putting in a piece of, a light bulb or an appliance or something like that, in non-resource programs, which means that their behavior'll change. In other words, you, you know.

Well, that's crazy, because a mandate is nothing more than a motivation. In other words, all the programs that the PUC approves and many, I presume, that the CEC is involved in, all of those are just methods, messages to get people to do something. No, no better, no worse. In other words, if, if Maytag offers a 10 percent off, or Sears offers an interest for the loan, or a utility offers a rebate, all of those are just incentives to change behavior to get them to buy a piece of equipment.

Same with marketing and outreach. If we can convince what I think the Energy Commission study after the energy crisis, that some 30 percent will do it for the, for altruistic, environmental or, you know, to do my part reasons, that's just not -- another motivation. So I

guess, I guess my point is, and I've seen it now, and working with, with the IOUs for, for some years and to a lesser extent even with the, the munis, it seems that our whole program design, the whole innovation is biased by we have to start from a position of being able to count it. And if you can count it, then you, you don't have to worry about getting credit for it.

So I would just ask, I guess principally to the PUC, because it's involved, to, to really look again at the whole issue of measurement and evaluation. And one size doesn't fit all. I mean, there, you don't evaluate, for instance, an information program or a marketing and outreach the same way you evaluate a rebate program.

The other -- and, and by the way, it's important. Art, you said something that, you know you know, you said that these resource programs have to carry the baggage of information on their backs. It sort of got my blood boiling because it sort of implies that there's really no benefit to them. I mean, that, that they're not, that you can't, since you can't count them, that therefore, you know, it affects the, the cost effectiveness of it. So --

COMMISSIONER ROSENFELD: You know, Wally, actually I'm irritated, just as you are. I, I think it's wrong for them to have to carry it on their backs, so I think we agree.

MR. McGUIRE: Okay. They either shouldn't have to worry about it, because it's -- I would even argue in a minute that the utilities and people who actually do change behavior -- and by the way, it's the behavior of buying the energy efficient product, and sort of a residual conservation doesn't doesn't last -- this is buying a, a Maytag Energy Star appliance or a CFL.

I think that, that quite frankly, all those people who are involved in that business should get some credit for it. Now, how do you do that? I don't know. But, but until you resolve that conflict, I believe you're bypassing, and I'll show you some charts, about 90 percent of the efficiencies the state can get, which are artificially controlled right now, by the, the way it's set up.

CPUC COMMISSIONER KENNEDY: I'm going to have to interrupt with a question, too, because I, I may have to leave before the end of your presentation.

MR. McGUIRE: Sure.

CPUC COMMISSIONER KENNEDY: But I, I've got the, I'm under the impression that the PUC is attempting to address the -- recognize the value of -- on resource energy efficiency by separating between resource and non-resource for the very reason that you seem to be criticizing. I'm not quite sure why that's the wrong thing to do.

MR. McGUIRE: It's the right thing to do. You just have a, an energy division who's coming in with an alternative and a technical report that says let's put it back altogether, and let's go down to --

CPUC COMMISSIONER KENNEDY: Okay.

MR. McGUIRE: -- measure individual things. So I, you are, I think that the, at the Commission level you did start to recognize that, which I think is a great leap forward. I think there's more you could do. I think you could actually start to assign some benefits to those people's -- to encourage it, that at least if it's -- you know, everybody should be measured and evaluated. No doubt about it.

CPUC COMMISSIONER KENNEDY: Okay, I hear you.

MR. McGUIRE: Okay. The second part of that sentence was revision of results from the utility and agency sponsored programs. I understand that's the domain of the PUC and the CEC. You are looking at your own programs. All I would ask is from, from the state as a whole, there are lots of other things that happen out there. On the private side, the legislation, there are many tools. For those of you who are familiar with the old cigar plan that we came up with in 2001, for the energy crisis, we started with all the tools government has. They have mandates.

I mean, take a look at, you know, Title 21 -- 4 is a great example of a tool that the government has, and so are procurement policies. You know, the state could be procuring things, so you're contracting. The state could contract only with those people who have procurement. There, there are prohibitions. I mean, I have been an advocate for a long time of what happens locally in the areas. The RECO -- not, not the criminal Rico, the R-e-c-o, the residential retrofit things, and, and CECO.

If in fact the energy savings potential

in both commercial and residential is at 30, 40, 50 percent, depending on the age of the house, and you enforce a retrofit on resale for water and energy, that's the way the state's going to get there in a big hurry. It's paid for, it's rolled into the mortgage, you know. That, that's the kind of policy. Even if you did it ten years from now. If you say in ten years you're going to have to do it, which was discussed in the green building initiative.

That's how they do it in Europe. They, they have these covenants that say you can be flexible for a while, but in ten years you've got to do it or your rebates go away. Now, that's a big mandate. If you have a commercial building, and we've talked to a lot of those people, they say I get it. I want to sell my building and every year I have this building liability? When they, when that next two floors, the law firm moves out, they're going to fix it up right because they don't want that building liability.

So I just, I'm hoping that you look at all of the tools, of which incentives are only one. Pricing is just incentive, that's been mentioned, you know, to pay more in real time or

something like that. Technical education. The government's really good at that.

And, and the thing is make them all work together. Right now, by, by this over-emphasis, I would contend, on assigning who gets the credit for those energy savings, you cause competition. Why in the heck -- you, you don't really know why somebody bought an appliance, to be honest with you. Maybe their kid came home and they had the, an energy program. Maybe they saw one of our commercials. Maybe it was the rebate. Why this, this trying to parcel it out so much that you, you don't work together on it.

And I guess this is where I'd like to just show you just the, the range of debate that I've heard up this morning is in the tiniest piece of what really goes on. And if you could hit that first slide.

This is -- is that the first one, or was -- was there one before then? You went too far. Okay.

This is actual sales figures in California for Energy Star dishwashers. If you look at the last three years, 2002, 2003, and 2004, the yellow area is how many of those

received rebates. The blue area is people who bought the right thing with or without a rebate. That's not there to be a knock on rebates. Rebates and the education around those programs is part of the education piece. But there's an awful lot of other stuff that goes on.

Some of it's standards. You, you see some appliance manufacturers shipping virtually all of their dishwashers to the state now are energy, Energy Star appliances. For those, there's a question, I think, that was listed earlier. Why aren't people, you know, how do we switch from a, a rebate driven thing to just doing it for the right reasons? It is happening. If you look at that, every year in this state we have a 60 percent increase in the sale of Energy Star dishwashers. The market is transforming due to the good work of all the different people working together. And that includes, by the way, water agencies, who also advertise water saving dishwashers and have their own rebate programs. The Maytags, the, the munis and stuff like that.

So I'm just saying that, that, that if we only focus on what can we do to improve our existing programs, particularly if you're biased

by whether you can count or not, you've limited the whole debate to that little area which is the yellow, when in fact, I believe the IOUs and everybody ought to be freed up to start to move that blue line up even at a faster rate, although 60 percent is damn good.

CPUC COMMISSIONER KENNEDY: Do you have any, any analysis of what drove such enormous increases and how much of it can be attributed to our, you know, co-marketing agreements or anything like that? Because, I mean, the untrained eye could look at that and say free riders, we shouldn't count it. It's gravy. But if we're actually doing something to help precipitate this --

MR. McGUIRE: Yeah. I, I don't. The, the closest is I think the CEC after the energy crisis did as, as the Washington State University Report, whatever it was -- they, they did a -- a very detailed sort of why people do what they did. And they were both, both measuring conservation and efficiencies. And people, interestingly enough, rebates was a part of it. And that's why I say this isn't knocking rebates, and I don't believe that it's a free rider, but a lot of

people, in fact I think the majority of them did it for altruistic or, or, you know, self-interest.

Remember, these rebates are only given on appliance that are already cost effective. If people understand that --

CPUC COMMISSIONER KENNEDY: Well, we're, we're spending money on ads right now.

MR. McGUIRE: Right.

CPUC COMMISSIONER KENNEDY: So, I mean, do we have any -- we have no sense of whether or not our, our marketing is working in that way?

MR. McGUIRE: Well, we are spending money, and I would contend that that's why you start to see some major jumps after 2001. Certainly the Energy Commission and people's awareness of energy made a difference. Our focus groups definitely say that people started to get the whole concept. In California, for instance, we're between 60 and 70 percent recognition of the Energy Star. People get what that means. In other states it's 20 or 30 percent. That's, a lot of it's the advertising and the, the programs utilities are doing, and stuff.

So, but I will tell you what. An understanding of why those numbers are rising so

quickly would be a much better way to measure and evaluate, rather than going down and ask, you know, the guy who went and bought an energy efficient such and such what message worked most to give you credit. The answer is probably going to be multiple things, you know what I mean. If the got a rebate, that may have been what pushed them over.

So again, the point is I'm asking really just to broaden this discussion out, which, which is really a way to say quit evaluating so narrowly, just on little programs, and encourage people to work together.

Can you ship me to the next one.

The Energy Star, these are room air conditioners. Same thing. You, you can see in 2004, 99 percent of the Energy Star home room air conditioners were sold without rebates. That doesn't, again, does not mean that rebates aren't critical. They are a factor. You know, it's one of the reasons that probably people shift and buy. But again, the point is we're making great strides. Again, if you look at those numbers since 2000-2001, up to 2004, that's marked transformation. Stuff is working in this state,

and I would contend it's all things working together.

COMMISSIONER PFANNENSTIEL: Well, I, before you go. What, you must know this, what percent of the, of all of the air conditioners in the state, then, are Energy Star?

MR. McGUIRE: Yes, I, we tried to get that and the CFL figures. I just couldn't get them before.

COMMISSIONER PFANNENSTIEL: Because you had it for dishwashers. Did you --

MR. McGUIRE: Well, the dishwashers was just Energy Star dishwashers. What percent of the energy --

COMMISSIONER PFANNENSTIEL: Okay. Well, then --

MR. McGUIRE: -- of the same ones that are rebated.

COMMISSIONER PFANNENSTIEL: And you don't know what percent of all dishwashers sold in California are Energy Star.

MR. McGUIRE: I don't, because we got these from --

COMMISSIONER PFANNENSTIEL: Okay.

MR. McGUIRE: That is something we're

trying to get, because I --

COMMISSIONER PFANNENSTIEL: Yeah, because it seems like then, then you get to the question of, of that, is that a large and growing percentage.

MR. McGUIRE: Right.

COMMISSIONER PFANNENSTIEL: Then you get to Susan's question of how do you analyze that, what is driving that.

MR. McGUIRE: That's right. Yeah. And this is, that's the very analysis I would encourage that we should be undertaking, is how do you get to those people who are buying non-stuff.

COMMISSIONER PFANNENSTIEL: Right.

MR. McGUIRE: And, and again, it's, it's just that we, we seem to be forced into focusing on one message, which is a rebate message, as opposed to all of them. And, on a big purchase like a, a major appliance, you know, the manufacturers will tell you that it's, it's interest free loans, it's those kind of things, because it's a big capital expense. It's probably more that than it is cash back or rebate.

I just don't believe that the flexibility has been given by the PUC to, to

really explore those programs. Maybe I'm, maybe I'm wrong.

CPUC COMMISSIONER KENNEDY: The no interest or low interest loan can be used by a non-Energy Star appliance.

MR. McGUIRE: Well, not if, not if you tie it. You know, if the only way you can get it is to buy an energy efficient.

CPUC COMMISSIONER KENNEDY: Is that the way they're doing it?

MR. McGUIRE: No, that's what I'm encouraging you to do, to allow it to happen.

And there's been a lot of discussion this morning about lighting. You can see how the, you know, a lot of people have said a lot of the CFLs sold in the state, you know, the emphasis on lighting, you can certainly see that. The, the number of lights, CFLs sold without a rebate, and I believe those are -- programs. They're not necessarily transparent to the customer. I think we're just, you know, doing it.

So, you know, the bottom line is, my point is really, and I'm afraid it looks like an attack on rebates. It isn't. It, it is more recognition that there's a lot going on out there,

and if you limit this discussion to just the programs that we currently do, you limit your, you know, there's no innovation, which is what the Commission has said it wants.

Interestingly enough, and I think as PG&E's filing, they asked for more flexibility. And what came back, quite frankly, I think, from the energy division was that's fine, but you have to do the evaluation to fit into our old format. Well, hell, that, that means that, you know, if, if you can give money back by approving it or not, you're certainly going to go with what's been approved, so.

This seems to have triggered some things. Are there any other questions on this before I keep on a roll here?

All I can say is, is that by the current method of evaluation, you have to find a cause, and finding a cause in this business, as in any business, is really hard work. And, and I think you just have to agree, you know, so that you allow other people to, to participate. In social marketing and, quite frankly, even in general marketing, if you read books like "The Tipping Point", or something like that, you

actually, the best marketing program is the one that you hide who's promoting it. Do you know what I mean? When we did the CEO pledge in 2001, it didn't say flex your power, it didn't say the governor, it didn't say anything. It said business leaders. They were -- if you were to come back to evaluate why people did stuff, they would say well, because Joe told me to, or the head of Carly did it, or something like that. When we did programs with Sears, when some Sears repair people went to do a repair, they were going to fix an old energy, energy one, they gave the ten percent discount if we would put, in this case the flex your power thing on it; 1500 were sold in three weeks. You know, those, those things you don't necessarily pick up in, in the evaluation scheme that you do.

We partner a lot with water agencies. Those first two appliances are water, have water agency programs behind them, too. That means you're saving energy because you're saving water.

I'll put up two other charts, or a couple more, on the commercial side to show you that what I'm saying doesn't just speak to the residential side. These are T-5s, the 2002-2003

figures. In this case, you can see that actually increasing rebates didn't necessarily increase the sale. It goes to your point though, Jackie, whether or not, you know, the overall market, was it becoming saturated, what, what was the, the deal on it.

Can you hit the next one, too.

And in D-8 you can see that actually, well in one case, rebates went up, in one case rebates went down. And it didn't in the end dramatically affect the ultimate sale of the energy efficient things.

And then the next one, the final one. It shows the same thing.

So the, I guess, again, my point is there's an awful lot going on. In the commercial sector a lot of the people we're -- they're becoming very sophisticated, because these incentives are given on products which are already energy efficient or cost effective. They kind of get that, you know. And, and so then they either think we can do just speed it up, which I think Edison did on lighting. You know, I think there's a benefit in speeding up, you know, the installation of these things.

So that's I guess the, the primary point. I have a whole series and Brian, I'll give it to you, a series of the response to specific questions, but maybe we should go through the panel and --

MR. PRUSNEK: Yeah, let's go through the panel and we'll come, circle back around to this.

CPUC COMMISSIONER KENNEDY: And I apologize for needing to leave early. Brian's my chief of staff and my energy advisor, so.

MR. PRUSNEK: I'll call, I'll call her tonight and --

COMMISSIONER ROSENFELD: And really, even though we don't -- your, your progress are really striking and certainly get my attention.

MR. PRUSNEK: Good. If I can get your attention --

MR. McGUIRE: Let me -- well, maybe just a little anecdotal thing before you leave. I just dropped my daughter off in Oregon, and I drove. What, what struck me about the whole trip up 5 and down the coast, was all the signs that said buckle up and safety. There were all these seat belt things, and they've been going on for years. And I know my kids learned about it. And then they

had this new campaign which is, what is it, buckle up, click it or ticket, or something like that.

I don't think anybody's looking to see whether that's cost effective or a waste of money. You know, did I click it because my daughter was sitting next to me? Did I click it because I saw those signs? Was it a permanent behavior change? We ought to be thinking of it a little bit more that way. It's, you know, the state budget, if we had to track that down to the specifics, we could solve the budget crisis like that. Just, you know, you, you couldn't apply the cost effectiveness and evaluation scheme we're talking about in energy to the school system, because it's -- years and years later. You know.

MR. PRUSNEK: Thank you, Wally.

The next, the next speaker is Alan Sanstad from LBL.

MR. SANSTAD: Thank you, Brian. Commissioners, thank you for the opportunity to participate today. This is, the set-up is a lot smarter than I am, so. Lorraine, which is the down? I'm going -- how do I go backwards? Sorry about that. Okay.

I'm a staff scientist at the Berkeley

Lab, and since I first came to that a post doctor in the 1990s, one of my research areas has been the question of why consumers, particularly residential consumers, do or do not invest in energy efficiency. So today I, I am going to offer a report of sorts on the research side of this question of what we've -- some knowledge critical knowledge gaps where I think the, what the research frontiers are and the policy implications.

Next, please.

Specifically, I wanted to discuss the following questions, which are part of the workshop description. Why haven't customers adopted the cost effective energy efficiency measure more fully without incentives or mandates? And the concomitant questions about what individual information would result in more adoption and what is required to make this transition toward more self-motivated option.

I would like to tell you what the answers to these questions are. Unfortunately, I have to do something else to try to explain why the research community, which comprises the National Lab, the Universities and private

researchers, cannot answer these questions more than a quarter century after they were first asked, and a quarter century after people first started thinking about them.

I will do that, and then sketch out what I think are the, the critical research areas that should be addressed. I, I'll also talk about policy. I do want to digress for one moment. I'm mindful of what, of Sheryl Carter's remarks this morning. I will talk about this issue of market barriers and market failures and try to sort of bluntly characterize that debate, that controversy and its, its policy role.

However, that question has generally been raised as in terms of, you know, the justification for policies such as codes and standards, utility DSM, and so forth. I will, my view is that policies, the policy portfolio that California has installed has ample justification elsewhere. Without the need to get into those questions I think the, the rationale and the, the demonstrated performance speak for themselves.

What I do think is that the questions I'll raise have, have policy implications looking forward for how the California policy environment

evolves, and specifically for how we address the question of greenhouse gas abatement.

Next, please.

To do this in chronology from this business, as it were, on my end of things, the, we talk about energy efficiency gap, the, the -- this exact phenomenon of consumers not adopting what seem to be cost, cost effective efficiency technologies or measures. Cost effective from their point of view.

This phenomenon was first recognized a long time ago, in the late seventies, as the early programmatic experience with energy efficiency gained ground and research by both economists and technology oriented analysts started to illustrate.

Since then there has been a great deal of debate about this among the various parties, but very little constructive engagement, a lot of sort of ships passing in the night is the phrase that comes to mind, and unfortunately, no resolution. At the risk of oversimplifying, I want to describe this in terms of two camps.

The next, please.

The technology perspective. This, I

think of the technology paradigm for energy efficiency as having been single-handedly invented by Art 30-odd years ago. This logic came some years alter, and the, the argument is that potential studies, other kinds of studies, demonstrate that significant cost effective efficiency opportunities exist in a variety of sectors, and continue to appear. The reason that customers don't adopt these is the consequence of various what are called market barriers. The, this list varies, but has tended to include things like risk uncertainty, attitudes toward efficiency, misplaced incentives, the problem of the landlord/tenant, transaction costs, a lack of information on the part of consumers, and so forth. And so these barriers justified policies of a -- these programs, codes and standards, to promote the diffusion of efficient technology.

Next, please.

Contrasting these economics perspectives, and I'm thinking with especially, you know, broader by share, because some economists are in the technology camp, and some, other economists I think are on the lunatic fringe.

(Laughter.)

MR. SANSTAD: But there's a, there's what I would think of a mainstream perspective among American economists, who said they couldn't take this problem seriously, that they acknowledge there are, their seeming anomaly of cost effective improvements not being up taken, but the $20 bill on the sidewalk problem is how it's characterized. And I can do no better than quote comments from an executive economists during the Clinton administration following the release of the first international lab study on national energy efficiency possibilities and their carbon reduction implications. This is a direct quote.

"There's an important threshold question," these economists said when reading this report, "of why cost analyzing firms would ever need any help from the government programs to take actions that would lower their costs, or if these technologies are such big winners, why aren't people and firms already adopting them?"

In a nutshell, this characterizes what economists have tended to say for over 30 years about this question.

The question, part of it, economists

think in terms of market failures. There's a, a doctrine of market failure which is the real classical economic way of describing what problems in markets are rationales for government policy, interventions of one kind or another. And so, okay, so the logic here is that there are, there may be market failures behind you, but -- and those would justify that policies we have, but the potential risk of what economists recognize as a market failure is shorter than the market barriers list, most of which do not warrant policy review.

Again, a number of economists long ago concluded the most likely market failures here have to do with information.

The next, please.

So I want to sort -- deconstructing both of these points of view.

Sort of the technology side, there's, I, I'm afraid that the, the market barriers idea has been fairly problematic, in the sense that these, these ideas were posited quite a long time ago, around 1980. And many of these ideas are plausible as explanations, but some probably are not plausible, and there's been very little systematic quantitative research to distinguish

between the two and determine their relative importance. The, the misplaced incentives problem is a very good example of that.

Nobody who knows anything about this issue disagrees that's, that is a legitimate problem and a reason for intervention. But to the best of my knowledge, it has never actually been measured in the United States. We don't know how big a problem that is. There was one study done 15 years ago in the U.K. that hasn't been followed up here. More generally, unfortunately, this, these ideas have not borne research fruit.

On the other side, there are a number of problems with the way the economists think of this. And one of them that's especially interesting is the possibility that many of these opportunities really are not printing all the rules on the sidewalk. There might be signs since on the sidewalk.

Very high rates of return from many efficiency opportunities, in spite of the fact that the amounts of money involved are somewhat low. And collectively, they add up to a big circle issue in terms of emissions and energy supply. But individually, they might not overcome

the transaction costs.

In any case, the information hypothesis seems to be -- underground. In, in the early to mid-nineties there was a, a meeting of minds between the economists and technologists on this issue. The problem is that taken at face value, it's, it's false. And let me explain what I mean by this.

It's, it's certainly not false, I'm not commenting about information programs or specific policies. But in general, the idea that somehow if you just simply inform people of these opportunities they will then adopt them where they can be -- that's -- been shown to be simplistic. Sometimes it works, but often it does not. The problem is much more complicated than that. But there are many of -- there are, there were numerous examples of, of that, situations like that, and not just programs but research studies, where the choice was made as transparent as possible, and people still did not make the investment.

Next, please.

There's a key methodological source of this problem this impacts, methodological in

terms, in the sense of the tools that people apply to it. The technology studies and the -- studies tend to use different technical approaches as far as models. But those models exclusively are what -- explicit discount rates for efficiency investments, which are simply the internal rates of return that, that consumers seem to require for adoption, and the fact that they tend to be very high. It's not unusual. There are consistent findings that people seem to demand 50, 100 percent or more rates of return before they will invest in an efficient device. This is essentially equivalent to the observation that customers seem to require very short payback times.

So there's been a lot of focus on this and a lot of attempts to discard it. The problem is that you put the discount rates and on and on, which is well established and, and well accepted. When we review is a symptom, not the underlying cause of what is going on with customers that causes them to go one way or another.

Next, please.

So with this background, let me sketch a couple of research directions or research areas.

First of all, if, if one wants to understand this whole phenomenon better, there's, there are a couple of prosaic things that unfortunately tend to be overlooked.

One is recognizing the issue of customer heterogeneity. Preferences, income, energy service needs, other factors that will affect the decisions very widely across customers. This is true both in the residential sector and the commercial sector. The difference, these kinds of differences matter for understanding investment decisions, but they're not accounted for in your usual average calculations, even if the average calculations have extreme technical detail in them as far as the energy of the devices.

An analogy is, is recent results on the variation in elasticities in time of use pricing environments. Though some studies have indicated that when you're trying to measure the response of customers to generic pricing, all of the response may be concentrated in a, in one segment of customer base. A lot of people don't do anything. Some people do a great deal. I think that's almost certainly true here. The principle applies here that we need to know better what

distinguishes people and how they approach this problem.

The second is taking account of multi-dimensionality of the efficiency choice problem, in the sense that the simple trade-offs, or the, the classical trade-off between purchase price and operating cost is almost never a good description of what people actually face. There are cases where it is, but typically, the efficiency choice problem is embedded in a much more complicated set of decisions. Refrigerators are a good example.

Refrigerators, there's, there are a host of features that people will value. Efficiency is one of them, but if you try to experiment sometime, we did go into a sort of -- for example, look at what's there, okay. Many refrigerators, different characteristics, some of them have the Energy Star label, they'll all, they'll all have the kilowatt hour labels, but you're not seeing up there buy this one and earn this return on the efficiency estimate, or buy the less efficient one. Okay. It's a much more complicated process, which has not, to this date, been well modeled.

Fluorescent lighting is a good example of this, but it cuts two ways. I, I sometimes see

this as sort of the very secret of some of the, some analysis, which is the problems with CFLs. The spectrum and obstacle problems, geometry problems. It's sort of well known that this affects people's decisions. It shouldn't be controversial. But it tends not to be taken in account in, in the life cycle cost calculations.

Well, on the other hand, it cuts both ways. Electronic ballasts, we're all aware, have long since been a superior technology for commercial lighting. They face very similar resistance from commercial customers.

On the third hand, if you will, the frontier for CFLs and all this fluorescent lighting is fairly far advanced. I happened to be, to visit the California Lighting Technology Center, supported in part by the CEC, last week. And not just the technology, but the human factors engineering is, is very far advanced there. It's clear that these technologies are, are superior in some cases, or approaching superiority to conventional incandescents, not just in their efficiency but in cost characteristics and other amenities.

The point here is that some people have

said that well, if you take into account these kinds of costs, this whole problem just disappears. That's not true. It's also not true, however, that if you take account of the benefits in some cases and costs in others, they cancel each other out. The point here is that one needs to look at the specific situations and specific technologies and make a more careful accounting of what people are actually facing.

Next, please.

And now to some sort of non-prosaic. Beyond this, I think there's, there's an over-arching need to complement what is the traditional and important focus on technology with a behavioral -- framing and approach this problem. What this means on the ground is moving beyond models, economic or technology, that focus solely on implicit discount rates in order to better understand what decision rules consumers actually use in evaluating these opportunities.

The standard approaches, life cycle cost minimization, utility -- maximization, and so forth, are, are very poor models that have these customers themselves framing these problems in undertaking decisions.

For example, there's, we usually think that a lot of customers don't engage in discounting at all when they face this, this opportunity. There are certainly new, very new and rapidly evolving frontiers in economics that are applicable to this, so-called behavioral and external economics, developing alternative approaches that -- approaches alternatives to sort of a classical economic demand model.

And finally, the need here is to combine some of these new, these mutuals that are going to be able to -- with a definition of social science research on energy. From the late seventies to the mid- to late eighties, there was a very great proliferation of work by, by a lot of social scientists, not economists, on energy and energy efficiency, anthropologists, sociologists, and so forth. So a, a knowledge base, of sorts, started to rapidly expand. They have never cohered, and didn't fully mature before energy sort of fell of the radar screen. And I think there is a need to go back to that and, and revitalize some of that work and, and embed it in some of the more modern techniques.

The next, please.

Finally, these are interesting research questions, but I think they're much more than that. I think it's self-evident why some of these, this set of issues are important for energy policy, but I also think it's, it's vital to address these issues in the context of greenhouse gas and -- policy, and Governor Schwarzenegger's recently announced targets -- the 2010 targets and the 2020 targets, I think we collectively as a society know how to meet, but it's going to be hard to -- there's going to be a lot of political difficulty, the number of estimates vary, and so forth, but we can see how to do this, I think, cost effectively.

But the longer range targets, the Governor's target of 80 percent reduction in greenhouse gas emissions below 1990 levels by mid-century, that is something we currently do not know how to do at acceptable cost. And it doesn't really matter if it's 2050 specifically if it's 80 percent, but clearly, the world, the country and the state, are moving toward a post-carbon economy. We don't know yet how to do that.

A variety -- there are contrasting political perspectives on power policy, but

everyone seems to agree that technology is the key, and I think it's true. Technology is eventually the key. But it's important to recognize that technology does not adopt itself.

Next, please. I've gotten ahead of myself a little bit.

We're looking at a very different kind of energy system. So the, the current foundation of our current policy, I think especially of codes and standards, sets a floor under efficiency levels in the markets, in the markets for buildings or appliances. That's what it's designed to do. But I think the, the future society that we have of lower or no carbon is -- will require moving everyone towards the ceiling, okay. And in fact, what we think of now as technical potential which provides sort of the outside but possibly not achievable envelope, has to be, we have to move toward making that somehow the norm among households and firms.

Understanding how to do this is going to require seeing the energy problems through the customers' eyes. To repeat myself a moment ago, technology does not adopt itself. We have to engage customers in a way that has sort of fallen

out of fashion, I think, in order to do this.

Last week I became aware of a, a phrase in one of the PIER, our old PIER founding, starting documents, which is smart and efficient customers. That is a good way of characterizing this. We need to create smart and efficient customers, low energy consumers, along with low energy technologies.

I have one other slide on relations and demand response, but I think I'll hold that possibly for the discussion.

Thank you.

MR. PRUSNEK: Thank you, Alan.

The next speaker is Doug Mahone, from -- and correct me if I misstate this, Heschong Mahone.

MR. MAHONE: Heschong Mahone.

MR. PRUSNEK: Heschong.

MR. MAHONE: Yeah. Thanks.

Yeah. For those of you who don't know me, my name is Doug Mahone. I'm an architect by training, although I've devoted the last 30 years of my career to working on energy efficiency issues. I am a principal in a 20-person consulting firm located not far from here in Fair

Oaks. We do a lot of work around energy efficiency primarily in buildings. We've done work for the PIER program, with the emerging technologies program.

We've dipped our toes into implementing programs. We did building science research and we also do a lot of measurement and evaluation. In fact, nationally, I think I'm known more as an evaluator than as a energy efficiency person, although, just parenthetically, that's going to change because I'm going to no longer be doing evaluation work in California. The PUC has decided that people like me aren't dispassionate enough to do evaluation.

But I was asked to talk a little bit about the Title 24 standards. I've been involved with the development of the standards and their evaluation for probably the last 20 years in California.

Let's see. Let's see if I can make this work. Yeah. Okay.

So one of the, one of the things that has I don't think quite been mentioned yet in all of this discussion about the importance of the Title 24 standards is that they are actually

unique in the world of building codes. Most building codes are adopted on a consensus basis. A bunch of architects and engineers or building officials sit around and decide what would be a good thing to do to improve the, the standards. And, you know, they, they may look at, at some data and some evidence, but Title 24 has to be shown to be cost effective in order to adopt it.

And the mandate of the Warren-Alquist Act isn't to adopt standards that, you know, a bunch of guys sitting around a table think are a good idea, it's to adopt standards that are shown to be cost effective. And they're adopted on the basis of solid analysis. The cost of the measures, their availability, their reliability, all those things are adopted -- are studied, and ultimately there's a judgment made about whether these, these are measures that are really ready for prime time. Can you take them from being something that people voluntarily implement and turn them into something that everybody's got to do.

So that makes the Title 24 standards, in a very real sense, the most rigorous building standards of any sort in the nation, and it also,

I think, gives us the opportunity to adopt stuff that perhaps other jurisdictions -- I, I sat on the ASHRAE 90.1 committee for years, and they're just hamstrung about being able to do the right thing because there were some things that you just couldn't get enough consensus on, notwithstanding the analysis, to get them adopted. But in California, we can go ahead and adopt them.

Let's see. Next slide. Wrong way. No, not working. Why don't you do the next slide. I don't know how to make this thing work.

Okay. The role of the standards I think is to help bring everybody else along. We've got the emerging technologies program for the early adopters. We have the utility incentives program for people who want to do the right thing or people who are prone to being bribed to adopt advanced efficiency, things that are beyond the code. And, and we use that as a way to prepare the market for things that can be adopted in the standards.

We also have what's sort of referred to as standard good practice. What a reasonably intelligent, economically aware person would do in terms of adopting efficiency into their buildings

or their appliances. But as we know, that doesn't get everybody. Bribing people doesn't get everybody. Paying incentives, providing information doesn't get everybody. That's where the standards come in.

The standards bring all those other people along by making it mandatory. But you're making mandatory things that make sense to do, anyway. And so you're accounting for some of these failures in the market.

The question's come up, in fact, Alan was just talking about it in, in a great deal of depth, about why doesn't the market do this. From my perspective, being involved in efficiency programs and standards and looking specifically at the building industry, I think there are a lot of very good, common sense reasons why a lot of people don't do it.

In the building industry, there's tremendous economic pressures to reduce first cost. It tends to push everybody towards the bottom, and that's why we have all the other codes we have. If we didn't have electrical codes, people wouldn't be putting grounding circuits into buildings. If we didn't have plumbing codes,

people wouldn't be putting in vent stacks. You really do need standards to offset those economic pressures.

We've also got in California a market where the builders can sell damn near anything that they can build. And so they don't really have to worry about energy efficiency, and especially because most buyers don't recognize what energy efficiency is doing for their buildings. Even if you show them the analysis, a lot of times they don't necessarily believe it, or they don't want to think that far ahead.

And then there's all the split incentive problems that the buildings are built by a builder who isn't going to see any of the economic benefits from the higher investment and it may make it harder for him to sell the building in the first place. If you've got a tenant, the tenant doesn't own the equipment but the tenant's paying the bills. So the tenant would get the benefit, but the owner, who would have to buy the equipment, doesn't get the benefit. So there's major problems there.

Even institutions or companies that are building for themselves, they often have a capital

budget separate from an operating budget. And I think you could probably apply that statement to homeowners, as well.

But I, I think really the bottom line, from looking at this over the years, is that people tend to focus their efforts on their main business, whatever their main business is. And for very few of them it is the energy efficiency of their, of their business, of their buildings or their lighting, or whatever, their main business. They don't know about it, they don't want to think about it, they don't want to have to learn about it. And there's always going to be people that are like that, and that's where the standards come in.

Next.

Of course, once we adopt it into a standard, and Bill was making this point earlier, we have to have compliance with those standards in order for the savings to actually show up. And traditionally, we've relied either on the licensing process of builders and designers, or on building officials to enforce the standards. And certainly in, in commercial buildings, which is my primary area of interest, there's a great deal of

reliance on the fact that it's a licensed architect or a licensed engineer that's designing the building and doing the energy calcs. But they're often untrained in energy matters and not very good at it, and they're subject to the same economic pressures that the builders are.

Building officials are also often untrained in energy matters. They've got way more standards to enforce than they have time to enforce, and they've got budget problems and everything else. So push comes to shove, they'll tend to focus on health and safety.

There have been new approaches that we've been using in California that are starting to show some promise. Of course, we've got the utility programs that we've been talking about all day. And there's increasing emphasis on using third party verification to make sure that what goes on -- what goes into the building actually functions the way it's intended to do and it produces the savings.

The compliance problem with appliance standards is, is a separate problem, because you're dealing with the people that are selling equipment. And if you can apply more pressure on

them to sell equipment that complies with our compliance standards, that's what's going to be need to make those standards work.

In the latest round of standards adoptions in 2005 and 2006, approximately 60 percent of those energy savings are coming from appliance standards rather than building standards. And there really does need to be more attention paid to enforcing the, the appliance standards more effectively.

Now, the codes and standards program that the utility runs to help with the Energy Commission's role of adopting standards has been mentioned here, and I think it's important to recognize that beginning as recently as about -- where am I now -- about 1998-1999, it was a new thing for the utilities to be actively involved in supporting the codes and standards process, and to be devoting serious resources to helping that process along.

Prior to that, almost all of the Energy Commission's standards were developed by staff. There was some public involvement and some review, but most of the work was done by staff. With this new influx of resources from the utility programs,

I think the standards have been able to make some substantial gains in updating the level of stringency and the, the scope of the standards.

And it fits logically with the portfolios that the utilities are developing. They're starting with emerging technologies and doing pilots and demonstrations. They're building a market through the incentive programs. And then, finally, they're locking in the savings through the codes and standards programs. It's really the most cost effective way to reach that section of the market that isn't going to respond to any other kinds of programs.

Next. Yeah, thanks.

You're, you're probably aware of all the different kinds of standards. This is just sort of a, a sample of the various kinds of standards that the utility programs, through their codes and standards enhancement initiatives, have, have brought to the table. They range from very fundamental things like the development of the time dependent valuation process down through some very specific things like appliance standards for pool pumps and, and in consumer electronics.

Next.

One of my most recent evaluation activities, probably one of my last ones in California, as I mentioned, was I was asked by the utilities to help them meet a request from the Public Utilities Commission to calculate what kinds of savings the utilities' codes and standards programs could be credited with. And we went through a fairly intensive three-week process to come up with an estimate that could legitimately be attributed -- of, of the savings that could legitimately be attributed to the codes and standards programs estimate -- efforts.

This table shows for three years, 2006, 2007, and 2008, what the utility goals, the program goals, statewide goals, set by the PUC are. And what portion of those goals we think are attributable to savings that will be coming online from the codes and standards programs. Is there savings from new buildings or new appliance purchases in each one of these years.

And it, the percentage of the statewide goal that the programs can achieve increases over time because the savings accumulate as more and more buildings get built, but they're big numbers. If you just look at the first line, the energy

goal statewide for the utility programs is a little over 2,000 Gigawatt hours per year. The codes and standards program with savings that will be coming online in 2006 is achieving about 240 Gigawatt hours per year, which is about 12 percent of that goal. The percentages increase as you go up over time.

I should point out, unfortunately, I just realized that that, the bottom line, gas, this is a slightly out of date table. The numbers on the bottom line are not as high as those percentages would indicate. They're more in line with the numbers you see in the first line in terms of percentages.

MR. PRUSNEK: Doug, can you help, help me understand the types of programs that you're alluding to in the codes and standards that the utilities --

MR. MAHONE: Yeah. It's --

MR. PRUSNEK: -- need for their portfolio?

MR. MAHONE: Yeah. What I'm talking about is basically those kinds of things that I showed you on that table of the examples, about two slides earlier. That's how much savings --

for example, there's a new requirement -- yeah, that was the table.

MR. PRUSNEK: Just go back one.

MR. MAHONE: Yeah, go back one. There's a new requirement under residential building standards that new, new residences will have to have hard-wired CFLs or hard-wired fluorescent lighting for a lot of the lighting. The savings that will show up in the houses built in 2006 from that requirement for hard-wired lighting is one of the components of that.

MR. PRUSNEK: I see.

MR. MAHONE: And likewise, for all the measures there's, there's all the different building measures that will be put into the new buildings that are constructed in 2006, plus there are all the appliances that will be purchased in 2006. And if -- we've added up the savings for all of those measures, and then started with the total statewide savings that will show up, and then we've discounted them for attribution and -- in fact, go on a couple more slides and I'll show you a little bit more about what, how we did that.

This, this graph, the red bars show the total amount of savings statewide from all of the

building standards and all the appliance standards in each one of those years that will be showing up in the marketplace. It's not the total savings for the entire -- for everything. This is the total savings that we can attribute directly to the utilities' programs in those red bars. And then we discount those by a bunch of naturally occurring market factors, code compliance factors, and so forth, so that we're only actually crediting the utility program for what would, would -- we're, we're discounting the stuff that would've happened naturally, anyway. And what's left in the green bars is what we're attributing to the programs.

But these are new savings that start up in each one of those years. And the green bars have the, the savings accumulate over time, and then they start to taper off as the naturally occurring stuff would've taken over anyway.

Next slide, please.

So in coming up with those green bars, we, we applied all these discount factors that I've got listed here, and I don't want to spend the time going into a technical discussion of them. But the point of all this is that this,

this estimate of savings is the net savings, the savings that would not have occurred, would not have accrued without the efforts of the program. A lot of these savings would've shown up in the market eventually, anyway. So we're netting out all that stuff, and it's still a big number.

Next slide, please.

So that's all I want to say about that. The one final comment I want to make before I finish here is that there's been a lot of discussion today about are the utility programs getting the balance right, are they, how come they're putting in so much on CFLs. And having sat as a member of PG&E's PAG and watched how the planning process developed, and I'm sure the other utilities did a fairly similar process, they were trying to work with these big spreadsheets that said okay, how much money do we have to spend in 2006, how much money do we have to spend in 2007, and how much do we have to save in each of those years to meet the goals.

And implicit in most of those calculations was the assumption that you would make for a CFL. You pay the dollars in a given years, and the savings show up in a given year.

I've got so much in budget, I've got so many savings that I've got to meet for my target, and that's my 2006 spreadsheet. Same thing on the 2007 and 2008.

The problem is savings occur in streams over time. And it takes a more complicated planning process to account for that. The, the extreme example of that is the codes and standards program with the example I was just describing to you. The dollars spent for the codes and standards program are spent one to three years before the standards are even adopted. Once the standards take effect and buildings start getting built, appliances start getting purchased, then every year from there out you've got a new stream of savings starting up.

And the way most of the planning has been done has been unable, they've been unable to account for these multi-year streams of savings. The money that's being spent in the codes and standards program for 2006 won't produce a single kilowatt hour of savings until 2009 or 2010, which is even outside of the planning window. And we're arguing now about whether we should be counting the savings that are coming online in 2006 and

2007, because the investments for those was made three or four years ago.

So there's this huge time mis-match in the planning process that I think is part of the reason for some of the things that Cynthia was pointing out, and others have mentioned here today. So I just wanted to mention that, as well, and I think I'm done.

MR. PRUSNEK: Okay. Thank you very much.

The final speaker of the panel is Steve McCarty, and then we'll -- from PG&E, and then we'll go to some Q and A.

MR. McCARTY: Yeah. I don't have a -- excuse me -- a prepared program, slide. I have a few talking points.

Again, I'm here trying to represent all the IOUs, and I invite my colleagues to, to join in when I misrepresent their positions.

The topic for this panel is called suggestions for program improvement, and actually, the California IOUs have been taking suggestions for program improvements virtually ever since the CPUC finally decided the administration decision, and that is the CPUC set up a collaborative

process called Program Advisory Groups, and a subset of that called Peer Review Groups. And as Doug mentioned, he is on PG&E's PAG, and we're very glad to have him.

The state of California has been doing energy efficiency for about 30 years, in contrast to a lot, a lot of other states. And one of the benefits of that is we have a large community of very intelligent, sophisticated, experienced people. Bill was mentioning how important for SMUD, working with stakeholders is, and we've found that to be equally true. We, and we look at our PAGs as a brain trust, so it's been, it's been a great process. We've had probably a dozen public meetings, all the PAG meetings are open to the public, and we have taken dozens and dozens of suggestions from them. So we're trying to get suggestions for improvements from all the very many good stakeholders that we have in this state.

In fact, in PG&E's case, we have filed that with our June 1st program filing with the suggestions of where and how we try to incorporate them. In our case, we incorporated about 85 percent of those suggestions, and we can make that part of this record if the CEC would like that.

So we've found that to be a very valuable tool. A subset of the PAG process is the Peer Review Group. The Peer Review Group is to work with the utilities in establishing good evaluation criteria, because bidding out for ideas, innovative ideas in particular, is a key part of the administration. And our Peer Review Group includes, in PG&E's case, Bill Pennington. I know Mike Messenger has been active member on the Southern California utility PRG. So we value that input. It's been a very open and collaborative process.

In terms of what's new, one of the key over-arching themes for all of us is that we have been in silos for the last several years. We have the Energy Action Plan, we have the energy efficiency goals, we have demand response goals, we are aggressively pursuing VG, but we've found that when you go to a customer, as you heard from some of the panelists, customers are very busy and using energy efficiency may not be -- energy efficiently may not be that customer's number one priority, so you don't get many shots at that customer. And customers don't like to be approached first with energy efficiency, and then

someone two weeks later with demand response, and then maybe a month later with distributed generation.

So we are integrating all those programs, again, consistent with the state energy action plan and the preferred loading order, so that when we go to a customer we, in our case we have an audit program. And we will show them all the energy efficiency that's cost effective, what the opportunities are for demand response, and what is available for DG. And we're trying to implement that throughout all of our programs, and again, trying to actualize the energy action plan.

In terms of financial incentives, rebates, we've heard a lot about that. We are trying to increase the amount of rebates. We do what we call point of purchase, or that are upstream because we find they are very cost effective. And buying down product through manufacturer rebates gets a lot of product to the market quickly.

We had a lot of discussion of HVAC this morning, and, and all of the utilities are, as Gene mentioned, are increasing their HVAC spending orders of magnitude. In PG&E's case we're

increasing our HVAC spending ten times over the next three years, what we're doing now. Our constraint, we think, is going to be what we can get the markets to adopt. And if we can in fact spend more on HVAC than our plans call for, we will do that. And we're asking the CPUC for the flexibility to do just that.

HVAC, the HVAC programs we are pursuing include quality installation, incentives for distributors, training for people in the field so that they, they understand what it is they are actually installing, and also right sizing. Often, HVAC systems are oversized.

We've heard a lot about our need to get the goals going long-term. A key part of that is going to be emerging technology programs. The investor owned utilities are proposing a doubling in the ET programs over the next few years because if we're going to get those aggressive goals going out long term, we are not going to be able to do that without new technology.

All of us have been offering refinancing programs. That was discussed earlier this morning. It will be on bill for the southern utilities. In PG&E's case, initially we're going

to have to have an off bill financing program, but as we can go through our internal systems issues we want to move to an on bill financing program. Again, that's another tool in the tool kit, to use that analogy you heard before, that we want to make available to our customers because capital constraints is, in fact, one of the things that's impeding energy efficiency.

And finally, we're going to have expanded commissioning and retro-commissioning programs, which will be available through all market segments.

Now, one of the goals that the CPUC has in the administration decision was that there be more innovation, and one of the ways that the Commission want to encourage that innovation was through competitive bids. Now, all the utilities are putting out a minimum of 20 percent of their portfolios for competitive bids, so that is going to be a very concrete and detailed suggestion for improvement when we put those bids out.

In PG&E's case, we are actually accepting bids in a lot more of the portfolio than just 20 percent. We're going to be accepting bids in all the portfolio except that which needs to be

statewide consistent. The programs, for example, upstream lighting, that are consistent among the utilities, it doesn't make sense to put that out to bid. You need relatively few actors. But we will be accepting bids in all our portfolio, but there are areas where we are particularly looking for suggestions. In agricultural and food processing, especially pumping; in high tech markets, especially data centers; hospitals; oil refineries; and wastewater treatment.

So that, those competitive solicitations have been identified, and we hope that next generation of energy efficiency programs that will give us the innovation we need to try to get those targets going forward.

So with that, I will end my brief comments.

MR. PRUSNEK: Thank you very much, Steve.

I'll just begin with a few questions, and then anybody else, please chime in.

We spoke a little bit on this panel about -- Bill Boyce from SMUD called it RD&D, I think the CEC would call it emerging technologies, they're very, very similar. In a nutshell, the

next generation of energy efficiency measures.

I'm looking to drill down a little bit on this issue to understand how we should be treating these programs so we ensure that they're given the incubation time that they need, and we don't unnecessarily abandon them too early before, you know, they should be brought into the market. Meaning, do we put these on a longer timeframe, or Bill, one of the questions I, I have for you with respect to your R&D programs is when do you, when do you decide that okay, this, this measure is ready and it should be integrated into our standard programs that we offer to customers. If we could just start some discussion around this topic and how do we treat these programs.

MR. BOYCE: There's, there's two aspects we studied in that, and first of all, you know, every utility has a kind of a list of standard incentives, and the easiest way to transition, I'll just say new technology into that, is simply to be able to get a, a new HVAC system to a maturity level that you just add it to the, you know, your allowable incentive. That's one portion.

However, there's also another class

where I'm going to have to develop a whole new program for new technologies. And one of the ones I can think about is energy efficiency for the digital economy, or, or, you know, 80-plus programs, it's a whole 'nother type of program.

So there's really two types of things when you, we've looked at technology transition to the marketplace.

To answer your first one in more classic how do I get something onto an incentive list, most of the time we are very patient and really work with the manufacturers, and we also try to broker some of the stakeholders with the user community. But one HVAC system, in general, I can recall we've gone through five different design cycles with them. We're very proactive at trying to get them to improve their product so they bring a good product to market. Because if we don't, you know, incentivizing something they come right back to the utility with a complaint, and, you know, we can't have that as a community.

MR. MAHONE: Yeah, I've got a, I've got a -- there's an aspect of the emerging technologies program that, that I've been thinking about for quite a while.

Most of the emerging technologies efforts that I have seen involve sort of picking a, picking a horse and running with him, finding one manufacturer or one guy who's got a really good idea and helping him develop that idea.

The problem with that approach is that if, unless it's also -- unless it also includes a significant amount of market research so that you actually know that there's a market for this guy's widget, you could be picking the wrong horse.

We've done some work with manufacturers in not super-advanced technologies, it's fairly prosaic technologies, like light wells for skylights. Not rocket science, not, you know, not even that's patentable as new technologies. But you talk to manufacturers who build products that could be adapted to that and they say oh, I never thought about light wells for skylights. Is that a market? And you show them how big the market is, and you show them that there's an energy there which we, as energy people, want to encourage. And they go oh, I could build a product that would meet that need. That's not that hard to do. I just never knew it was part of -- I never knew anybody wanted anything like that.

And I think there's a whole kind of flavor of emerging technologies program work that ought to be based on that, on doing that kind of market research, rather than trying to pick somebody's widget.

MR. PRUSNEK: Uh-huh.

COMMISSIONER PFANNENSTIEL: Brian, if I might.

MR. PRUSNEK: Sure.

COMMISSIONER PFANNENSTIEL: I'd like to jump into the emerging technologies question somewhat differently. And, and actually, I think that what, what Doug was just saying is sort of what I was thinking, was that the technologies are fascinating, and it's a really sort of interesting way of looking at the question.

But we have a lot of the old technologies that have been around for a while that we still can't get customers to buy into. And so it's sort of the, you know, is, is it a question. Maybe I, I should put it better in a question form.

Is it a question of that we don't really have the stuff that customers are looking for? The, the lighting that really would make them

happy, or the efficient appliances that they really want, and therefore if we find this right equipment our problem will be solved because they will be, you know, lining up at CostCo to take these things home. Which I thought well, these slides on, on the saturation of CFLs was really interesting, but I still, you know, see big piles of CFLs in the stores that people don't seem to be buying.

So do we need to get to the next level of technology before we get there, or have we just not found out what it is that makes customers buy even the current technologies. So, anybody want to try that one?

MR. BOYCE: I'll jump in here a little bit. Being more or less in, in the technology development, most of the, the widget manufacturers really don't do very good marketing, or market definition. Usually, they're struggling with their product just to get it developed, and in many cases, and I would say this is the majority, they bring it to the utilities and they want the utilities to do all the marketing development for them.

You know, we're only limited by also,

you know, so far that we can go. But your question of what makes a customer purchase a product, you know, kind of drives that some of the factors I think Wally was looking at. You know, very often the real motivating factor is not energy efficiency, it's the fact that the product can deliver something else to them.

One of the ones that comes to my mind is on demand hot water systems. The fact that it can get hot water to them within a couple, you know, five seconds, is more valuable as a commodity than it is the fact that it saves, you know, so many, you know, natural gas BTU units.

So, you know, the whole market definition around energy efficiency isn't necessarily the primary market driver. And the more successful products really find a very good market, very good market value stream that they tap into, and typically it takes a more mature manufacturer with a lot more resources in that area which, unfortunately, the majority of the break-through technology folks really don't have.

COMMISSIONER PFANNENSTIEL: Well, for example, GE sells compact fluorescent light bulbs, but I don't see them marketing them to the extent

they're marketing a lot of their other appliances. Is, is that an issue?

MR. McGUIRE: Well, I, I do. I mean, I think when, when a manufacturer or somebody invents a new topic -- I mean, a new product, whatever it is, if you don't market it, it's not going to get sold, to be honest with you. I mean, a lot of people are confused. I believe that marketing is to the general public. Not too many of these products are marketed directly to the general public. They're marketed to the retailer, or the Safeway, or to try to get the real customer to them is that middle, middle person.

And very often, the strategies of marketing on that are a little different than have been used. I mean, I agree. I think with a valance, that the, the information is not enough. It just isn't. I mean, I would totally agree. I've looked at some of those studies. I mean, good marketing or good sales is a lot more about incentives and, and other people are doing it, and, and things other than just energy savings.

If you look back at -- we, we spent a hundred million bucks on flex your power ads over the years. We spent more time talking about

together we can do this, and, you know, keep the lights on in the schools. We, in all our focus groups the most powerful messages were all -- not the savings numbers, you know. Particularly on things like CFLs, the savings numbers were so tiny. You get the retailer saying I can sell those 60 watt bulbs anyway, what the hell am I doing here. These people have had a bad experience, they're funny looking or they don't -- remember, we had a lot of barriers in the beginning of CFLs. They didn't fit in the sockets a lot of times. We got a lot of cheap ones that came in right at the beginning of the energy crisis and they burned out and they got bad experiences.

So we have double barriers on CFLs to overcome. But I, I just believe that we need to, to really pay attention to effective marketing and, and outreach, and not just get hung up on the fact that it saves energy, which is probably all of our -- we, we think that's the big deal. It isn't to most people. It's a lot of other stuff.

COMMISSIONER PFANNENSTIEL: Right. And I think that that was some of what Alan was trying to tell us, too, is that there are bunch of other

factors that we haven't begun to mine yet.

MR. McGUIRE: Can I give you another example on just lighting? We, we had an arrangement with Lowe's where they, you know, they put in a center aisle, it's a 32 foot, and we worked I think with Steve at PG&E and some others to get them to, to make that center lighting aisle an energy efficient lighting aisle. They told us that their sales of whatever the heck they put on that aisle went up 20 percent. It's all about positioning and stuff. That's why product salespeople will fight for end caps when you walk into a store and stuff.

And that's the kind of marketing that you really need to do. I know we've been talking about a test thing for, for marketing. I can tell you, until the manufacturers and retailers all get on board and decide to market this stuff, we can, we're whistling in the wind, we can -- that's why we need probably more rebates to sell them than others. We need to really get them in as partners.

MR. McCARTY: This has got to be one of the benefits of a longer program cycle, because for, starting with the electric restructuring, the

average program length for an energy efficiency program for industrial utility is about six months. Until the start of 2003 when we had two-year cycles, which was great, now we're into a three-year cycle, which is nirvana for us. And we'll be able to coordinate with manufacturers and distributors, and work with Wally to get coherent messages and get into their distribution cycles and their manufacturing cycles to take advantage of all the players in the market.

MR. McGUIRE: Their, their cycles are somewhere between 18 and 36 months, and they, they've already planned out their marketing, their manufacturing, their shipping and all that stuff for next year. And the PUC has remedied that with these longer cycles, which I think is great.

MR. SANSTAD: Can I ask a question. What you've just said, I, I've heard very often, you know. And it seems almost part of folk wisdom. And I'm wondering is there -- what we're talking about here is, is not a new idea, as near as I can tell. And I, I've heard this in different quarters for a long time that it's not their efficiency, it's other characteristics or, you know, we know what we're talking about.

Is, is there sort of institutional recognition of this within the utilities and some formal base for how to deal with it? I mean, in, in terms of marketing, in terms of design, in terms of, you know, partnerships with the manufacturers along other than engineering -- energy efficiency dimensions? Because it seems like what, what suggests itself here is some sort of effort to put all this together, even on a pilot basis.

You know, choose some technologies, some sectors, some, something, and do the whole enchilada from design to energy efficiency to marketing, the integration with the manufacturers, would create the highest value product that is also energy efficient, and, and try to push it.

MR. McGUIRE: Well, I think that that is the smart way to do it, is to do it as a holistic approach, not only thinking out further but, you know, the, the whole deal. That's not generally happening, and I don't want to hound on evaluation and, and such too much, but a lot of that's very hard to evaluate and assign credit to.

For instance, you know, we, we were able to get a couple of manufacturers to pledge in

writing, you know, what does that mean to, to sell more, to ship more energy efficient appliances, because appliance sales is all about the amount of floor space you have. People don't shop around at ten different stores. If it's on the floor, it sells.

The recognition program which is, you know, we probably have to -- is totally untrackable. And, and so if we were really smart, and I think we're trying, we've tried to, later on in our pilot stage, actually working with the CEC to come up with a more integrated approach with partners, the utilities and the manufacturers and the retailers.

MR. SANSTAD: So this, can this be done on a pilot or research basis outside the formal M&E process?

MR. BOYCE: I don't see why not. But I, I'm going to try to understand from you some more suggestions, because I think the, the situation we're facing is the utilities being the, the electric service providers in the service territories, were trying -- they're trying to transform into more of energy service providers in their service territories. But how else when a

utility markets this, this measure to its customers, you, the example got brought up earlier about how a customer could value instant hot water much more than the fact that it's saving energy. But I can't imagine the utility going around and -- - maybe they can make that a part of, of their set of information, but how do we start kind of informing the consumer that there's much more to this than saving on your monthly bill.

MR. SANSTAD: Well, I don't think this is solely a utility function. This is not, it's my understanding it's -- this, this is not something the utilities could do alone.

MR. BOYCE: Well, it, it's something, it's something we don't to do alone, and one of the advantages we have in being able to partner with a large retailer is that we basically get free advertising. We leverage off them, and we'll probably, we will go through the process -- excuse me -- in terms that it's cost effective and it should be incented, and then working with all the market actors we get basically free, free publicity and advertising, and they can push the other attributes, as well.

So it's not, it's not something we have

to do. And again, it's one of the advantages of having the partnerships.

MR. TUTT: I had a couple of questions. We've heard a lot about program budgets here today, and the increases in program budgets, and I'm wondering, as you go through the, these budgets and allocate down to specific parts of it, specific programs, and then go through the year, do you run out of money in particular budget in programs, and what happens when you do? Was that more of a problem in the past, and less of a problem with the increased budgets we're talking about?

MR. McCARTY: Well, it's been a problem in the past, and it may be a problem in the future. As I mentioned, we have very aggressive increases in HVAC. We hope they take off. One of the things we really would like is more flexibility so that if one program is not doing very well but there are a lot of savings in another one, that we have the flexibility to move to that program immediately.

The tech market report that came out a week ago made this point that markets change in a matter of days, and so we have to be as flexible

as those markets. So we want to have that flexibility. We've had it some in the past, but we have run out in the past and we're running out this year, in fact, so we think that's, that's going to be a really critical element to be able to get these goals, because we're filing a three-year program. Nobody knows with any degree of certainty what a market is going to be like for anything, and I would argue, three years from now.

So flexibility will be a key element for us to be able to get those really aggressive goals.

MR. PRUSNEK: Right. And, and from the CPUC's perspective, that's a major component of our upcoming decision approving these program budgets, because the three-year program cycle goes hand in hand with flexibility for all the reasons that Steve has alluded to.

MR. BOYCE: Yeah. It's not really very typically run out of money before, you know, all the subscribers are there, various techniques are to stagger programs to have like a spring campaign, fall campaign, in between happens to work with our business cycle to, to tweak the programs to get a little bit better performance.

But very typical to run out of money before subscribers for the individual programs.

MR. McCARTY: What we really don't want to do is run out of money and then start up -- and start up again two months later, because we talked about the stakeholders and all the people we need to be in the market, so if you, if you were to close out a program people go away, some contractors go to different markets, so it's really important that we have that continuity, again, to keep the, to keep the whole infrastructure healthy.

MR. BOYCE: In our case, we pretty much have most of our contractor networks in tune with those program cycles, and it's been, you know, years and years of history with them, and they're pretty well adjusted to that.

The part we have found it's been damaging is if we change an incentive level between one time period and the next. And, you know, the tendency is if you're trying to make metrics I'm going to tweak it up with more of an incentive on the second period. And what you, you find out is, you know, people lose touch with the programs that way, and that has had, you know,

some problems in the past.

MR. MAHONE: The other thing that's related to this is the fact that many of the market sectors operate on multi-year time horizons. Commercial new construction is a very good example of that. Between the time, you know, an architect gets hired to design a building and the time the design is completed sometimes is two years. And then another two or three years before the building's in the ground, and if you've got a program that's only got a one or even a three year cycle, you're not necessarily going to keep those people engaged in your program because you're not around at the time they need you.

So this, this longer term time horizon is very important for getting those bigger, longer term opportunities.

MR. TUTT: And the budgets to have those opportunities happen continuously seem equally important.

MR. MAHONE: Yeah, exactly.

MR. TUTT: Particularly in portfolio based cost effectiveness for these programs, what criteria do you use to decide what components are increment or, or left out of the program?

MR. McCARTY: Well, again, we try -- we try and have a balanced portfolio, so we have different market segments we're going after, and we have short term versus long term. So it, it isn't a process, it is an art as well as solving the science of cost effectiveness and, and we run this through our PAG process and our PRG process, and we try and cover all the market segments we can because we're not supposed to leave anything on the table.

So again, it's kind of an interim process, and we did a lot of back and forth, a lot of analysis that goes into that.

MR. MAHONE: One of the, one of the benefits of doing this as a whole portfolio is that I think California is going to be able to get to the point where New York is already, for example. NYCERTA runs the statewide portfolio program, and when we do the benefit cost calculations for them we can do benefit cost program by program, we can roll it up to the sector level, and we can roll it up to the entire portfolio level and have a consistent set of cost reporting, benefit cost calculations, and so forth, through the entire portfolio.

And having that kind of perspective allows you to look at each one of the components and say oh, this program has a really crummy TRC, but as part of the overall portfolio, the portfolio is fine, and we can see that the, one of the reasons this program has a bad TRC is it's in the early stages. It's just building up infrastructure, it's just starting out with a new set of technologies, and so we'll give it a couple of years to have a lousy TRC.

Being able to roll that up like that is going to make us much smarter, you know, managing the overall portfolio.

MR. McGUIRE: Can I put in a word on the portfolio, because I, because I agree with that. We can learn a little bit. Actually, Byron Shearer and his group, he wrote solid waste 8939, that basically San Jose, years ago, cities were having trouble meeting their goals because there was no market for their recycled goods, the recycled oil, recycled paper and stuff, because cities had these contracts, low bid, or, you know, low, low cost. And so they were having to collect all this stuff that they couldn't sell back in the market, and they were ending up burying it. And,

I mean, there's just, they were paying money to haul it off to landfill anyway.

San Jose got around it by, by looking at a, basically a portfolio approach. They took, I think it was 27 different recycled goods. Some were very cost effective, some weren't, some weren't cost effective at all, because there wasn't a big enough market for it yet. And they, the took it as a portfolio, the whole portfolio actually cost less than buying virgin material for all 27, and they created a market. In other words, they, they looked at the whole picture. And I think, maybe that's I think what you're saying on the portfolio approach that the utilities are trying to do now.

But if the goal is not spending, how much money you spend, which is sort of where we are right now. I mean, the only way you can increase appliance sales is to have more rebates, which means more money. If the goal is saving energy and you take a portfolio approach, then maybe you'll start making sure before you, you put in a central air conditioning, you size it correctly. And then you, you fix the envelope of the house first. Or maybe if you combine programs

where the efficiency and demand response are doing it, maybe you give a rebate on an HVAC system if that commercial company signs up for demand response.

And my sense is if you start to link these programs you can, you can get some synergies which will create more, more savings.

MR. McCARTY: That's absolutely right, because we don't just have three-year goals, we have ten-year goals that the CPUC has set for us that are part of our resource procurement. So we, and we will tolerate a, a lousy cost effectiveness in the earlier years knowing that we have very, that our goals don't get less aggressive as we go out.

PRESIDING MEMBER GEESMAN: Are there metrics to evaluate the effectiveness of the marketing programs?

MR. McGUIRE: There are old ones. I mean, you know, there's hundreds and millions of dollars spent in marketing every year if you're talking like ad campaigns and stuff. And there's very precise metrics.

PRESIDING MEMBER GEESMAN: Yeah. I mean, it seemed to me there could be, but are

there in the existing programs?

MR. McGUIRE: Yeah. Yeah. The current system that CPUC has approved and that we've proposed again basically replicates what, what the private sector does. In other words, it's reaching, for example, how many people hear your message. That's a very precise measurement. In fact, it's argued over by every company who ever buys anything.

There's qualitative and quantitative research to figure out whether when they hear it, what the message, what they take away as. And then what I've been hearing today is I think we should also do what the private sector does, let's look at real sales. Because that's it. If sales are going up --

PRESIDING MEMBER GEESMAN: I would think so, you know.

MR. McGUIRE: Those three make a lot of sense to me.

PRESIDING MEMBER GEESMAN: I, I would think you'd want to broaden that beyond utility programs, as well, because ideally, your, your marketing program affects a lot of purchase decisions that don't have anything to do with the

utility programs.

MR. McGUIRE: Yeah. And, and I would, I agree with that, first off. But I'd also say a lot of times it's the marketing materials. If you look at the, at the utility programs, they're selling energy efficiency. And if they sell it correctly, the fact that they got a rebate this year, they'll -- that person with or without a rebate next year, the third year, may buy it. In other words, there's no way to really capture that right now.

MR. BOYCE: And also, Wally, on, on the front end doing more focus groups, as well, where we're actually looking to figure out the message before we go into play, correct?

MR. McGUIRE: Exactly.

MR. MAHONE: This is, this is actually a very big topic within the evaluation community nationwide, is how to get a good handle on broader market effects that extend beyond the boundaries of individual program activities. And I think historically, California has been focused very much on, you know, one program, one year, we're going to measure how much this program accomplished in this given year. And it's always

been subject to the, to the limitations of that kind of narrow sort of silo approach to doing the evaluation.

And I, I don't think we yet have agreement within the California evaluation framework to do overall market effects and to credit those to program activities, and, and I think a lot of what's, what Wally's saying is that we are investing a lot of dollars, a lot of resources in generating broader market effects, but we're still focused on, you know, measuring those savings in the TRC, you know, little program by little program.

PRESIDING MEMBER GEESMAN: I'm a little troubled by that, primarily because we were told -- I think I've got my years right -- that from a crisis in '01, savings had a decay rate of about 50 percent to '02, and we were told that that 50 percent decay rate carried through to '03, as well. And I, and it seems to me that these crisis-borne programs don't necessarily have the, the basis by which to sustain themselves over a longer period of time. And I think that much of the behavioral research that we did last year, that was published last year, were studies focused

on that crisis period, and yes, they found altruistic motivations, but that may not be as, as prevalent a factor when the sense of crisis goes away. And it would appear to me that the state has an interest in putting these programs in a multi-year basis and intends to be in this business for a long period of time.

So I, I guess I'm, I'm troubled by the notion that, that we are still stuck in the, the year by year decision making and it's measured, I think we all know, by how much of a sense of crisis we have and not the impending summer. That doesn't seem to me to be a good, a good foundation for a larger marketing effort.

MR. McGUIRE: I think the PUC, having gone to the longer range, I think we certainly have moved ourself a little bit from the year to year. But I think you're also referring to that distinction between conservation and, and efficiency. That 50 percent number, if memory serves me right, in 2001 and '02, was how many people had stopped, you know --

PRESIDING MEMBER GEESMAN: Right.

MR. McGUIRE: -- would, wouldn't turn their thermostat up to 78 once the crisis was

gone. I believe that's where most of that 50 percent -- I have not seen the study that says behavior, in terms of getting an energy efficient appliance purchase, goes away. In fact, I'm, my guess is that once somebody gets that, they know it's cost effective or that it saves water, or whatever the reason they did it, with or without a rebate, I bet you that stays at a much higher rate. It would be a good study to undertake, but I --

COMMISSIONER PFANNENSTIEL: It would be a good study.

MR. PRUSNEK: Mike Messenger had a question here.

MR. MESSENGER: I wanted to try to tie a number of the themes that have come together into one, one specific suggestion for how to actually increase the rate of take-up in terms of energy efficiency actions that all of these programs are trying to get.

First off, I find it ironic that people are talking about focusing on programs specifically and not sectors, and this, this focus on year to year. The reason I find it ironic is when we started to try to look at markets for a

multi-year basis in 1998 and 1999, there was this big turmoil about well, no, you're not actually measuring the specific effect of this program, and sort of, it was called market transformation at that point in time and people said get rid of that, we want to go back to a resource focus where you can attribute directly to the program. So now what I see is the pendulum has revolved again, and we're going back to a look at markets, which I heartily approve of.

But now let me get to my specific suggestion. We all live every day of our lives in a signal to noise problem. And the signal to noise problem is on average, we get exposed to 100 different advertisements just in the course, just in the course of our normal day. And if you watch TV, it's much bigger than that.

So when you're in that kind of a problem, the biggest thing that you can do is try to get people feedback on when they do make a purchase, what the effect of that has been on their life. And the distinguishing characteristic that I think exists in all of these programs that there's very little feedback to customers after they make the adoption.

The customer buys CFLs, or they buy their air conditioner, or whatever, and there's no systematic attempt to give them some information about either did it reduce your bill, did it live up to your environmental standards in terms of give you the result that you wanted for, I don't know, reducing pollution from power plants, or whatever. And from my perspective,simply an attempt to market -- or, not to market, but to mark every customer that participates and give them some form of feedback, be it positive or negative, on the result of their investment would dramatically increase the rate of uptake of all these different types of investments, because the most important form of advertising that we haven't talked about right there is word of mouth. Particularly in the mass market.

And so when people start to talk to their neighbors about, you know, I installed this particular measure and I had a positive result, you know, the utility sent me something that said I saved $5 on my bill, or $100 on my bill, or that type of thing, at least the studies I've seen suggest that's the most strong form of advertising.

And I think what we witnessed in 2001 was an example of that, because I think Flex Your Power was the mechanism that was being used to reinforce or provide people with feedback of the results of their decisions. Because what happened is when people would start to, for example, shift energy use off peak and it was reinforced by, gee, we didn't have any problems at the power plant, you know, there was no crisis this month, and, and they kept hearing the ads that, you know, you're doing the right thing by moving your behavior off peak.

So I would think that every single program should sit down and think about how can we give our customers feedback after we make the sale. And that's the thing that I think is, you know, across the board, just doing that one thing I think might help increase the market adoptions and we wouldn't have to spend all this money on rebates. And, you know, we could, in theory, we could go to just simply marketing after a while, because word of mouth would spread the information and we could move perhaps more toward more emerging technologies.

So, thanks.

MR. PRUSNEK: Thanks, Mike.

Alan, did you have a comment in response to that? Okay, I want to keep comments in response to Mike's --

MR. SANSTAD: Is it possible to bring up my last slide? Or next to last. Next to last slide.

I, I want to strongly second what Mike just said and elaborate a little bit. Oh, they turned the power off.

MR. MESSENGER: We were just being energy efficient. I'll hold it up.

MR. SANSTAD: The -- oh, here we go. I'm Power Point dependent. I can't think without the slide.

(Inaudible asides.)

MR. SANSTAD: Yeah, there we go. The, there's a, there's a broader theme here, which is I, I think -- I think, from being outside the system, you know, demand response is followed sort of side by side with energy efficiency. They're both important, but they're not, the, their very close relationship with -- between the two is not appreciated.

So in terms of, first in terms of the

research issues, whatever is true about consumer, you know, the, the mystery of consumers' adoption of energy efficiency is, is all the more true in terms of just how people deal with their home energy environment once they have everything there. I mean, one way to think about this is I don't know if you ever heard of DOE 2. It's a simulation model that's used to design buildings and -- well, the engineers use DOE 2 to, to estimate how things are going in a building, right, and it's, they're estimates. They're not perfect. How, what do consumers do? What do they know?

Pardon?

COMMISSIONER ROSENFELD: I just didn't hear. The engineers said --

MR. SANSTAD: The engineers, I'm making an analogy, I'm driving home a point of what the consumers do not know is in their home energy environment. Okay. I'm using, I'm using the model to make the point that the engineers have developed DOE 2 to try to understand that.

What do consumers do in the absence of DOE 2, in the absence of, you know, monitoring equipment. The, this is starting to come up a

little bit in, in the context of introduction of -- and pricing that is I think all the more important. The, the advent of information technology, and, and the CEC is supporting a lot of this work, the, the development of demand response technology, to me is a very important key here, because right now the level of what we're getting toward is that energy is almost invisible to people. Okay.

I mean, Mike's point is very well taken. You can, the utility may tell you what your benefit from buying an efficient appliance is, you may have the label. Once you get it home, you don't know. You, you, it's impossible to know. But it's getting to the point where it's technologically possible to know exactly that. And I'm, I'm talking about the self-metering, there's a way that information technology is finally, is getting to the point where it's allowing people to actually control their home energy environment closely.

And I think that the, this joined the problem with investment in efficient technology and utilization, how you control your, your portfolio of appliances in the home and how you

respond to dynamic pricing, this is a single problem. And I think information technology is the key to how you tie all this together.

Thanks.

MR. PRUSNEK: That was going to be one of my questions. To get to what Mike is talking about, what does stand in our way? Is it, is it the metering infrastructure, is it the, is it just the pure lack of follow-up? Is it the cost to get back to every residential consumer and let them know in a month, hey, after you bought these appliances now look at your savings? What, what barriers stand in the way of getting that information back? Because I know, for example, under the Flex Your Power campaign, PCSA was taking out ads at one time in, in the newspaper congratulating those individuals who were exemplary in their energy reduction efforts, water reduction efforts, things like that.

So that was free advertising, and that was the word of mouth that people, wow, you, here's what they did and here was the difference. But when we're trying to boil it down to the residential level, even, what barriers stand in the way?

MR. McCARTY: I can think of one. That's cost, because you have tens of thousands of people, say a mailing -- program, who live in different climate zones. And let's say I bought a new dishwasher. And you can estimate the savings on that. But let's say there's also a heat wave three days after I install that dishwasher and my bill goes up as a result. And I get something from the utility saying oh, your, your bill should go down by this amount, but it really went up. I man, there are very many factors. And so you'd have to, there'd be a lot of costs involved in calculating, then you'd have, you'd have a lot of cost to your, your call center, too. So that, that is a barrier.

Now, there may be other things we can do when we give them the rebate, give them some more information. That's the kind of thing that we encourage at Program Advisory Group meetings. So, Mike, the next one is the 27th of this month, and that's the kind of thing -- one of the things we've done with our Program Advisory Groups, we've created what we call Paguettes -- we've created a new vocabulary -- where people who are interested in particular topics will go off and work on them

together. We have one on HVAC right now.

We have another word we've created, to be Pagged out, which is to have gone to lots of meetings and you can get sort of tired.

But that's the kind of that we could, could get a sub-group working on.

MR. MAHONE: I can give you a technology example, sort of linking back to that emerging technology discussion we had earlier.

Our firm's done a lot of work on photo control systems for daylighting that automatically turn down the lights when there's available daylight. And we've talked to a lot of manufacturers of these photo control systems. You cannot buy a photo control system that has a little read-out that says this system has saved 75 percent of light over the last month. In fact, you install one of those systems, and other than seeing the lights dim every now and again, you haven't a clue how much the thing is saving to you.

And we've asked manufacturers, you know, well, why don't you provide that kind of a little read-out on your controller so people can see what -- and they could use it to adjust, to calibrate

the controller, you know. Let's go 85 percent next month, and tweak it.

The manufacturers say, I don't know, nobody ever asked for anything like that. Nobody ever told us that would be a useful thing. It wouldn't be hard to do. Why should we do that? The emerging technologies could identify opportunities like that and explain to manufacturers why this would be a good thing to do.

MR. PRUSNEK: If anybody else has any comments on this topic I want to just caution we have a few more minutes, and then we're going to wrap it up and go to public comments.

MR. McGUIRE: I just wanted to follow up. You're, Brian, you're correct in terms of those newspaper ads. Those I think are probably one of the more effective forms of educational ads we've done. We, we, if peers see what other peers have done. If we say that QualCom saved 30 percent on its energy bills and did this, that, and the other, and you put it in the L.A. Times, we end up inevitably getting calls or notifications from others who want to be in those ads, first off, where, you know, that shows one

peer, a person doing it and others.

So I, I do think Mike is right in terms of that feedback loop. We're doing a thing with the ethnic press, which is a little different. We've having, in 13 different languages, the ethnic publishers find leaders in that community who are in essence giving testimonials. The head of the, maybe a Baptist Church, talking about why they've saved money, or something like that.

And then I guess the only thing I'd say, and it's just a little bit of a barrier, is that the information about who buy those, you'd have to get it really from the manufacturer or the retailer. We have a pilot that's going on right now to do follow-up postcards for people who bought energy efficient stuff, and to get around to your point, Steve, we're talking about the broader benefits. Thanks for helping us save the environment, save water, this, that, and the other.

MR. PRUSNEK: All right. Thank you, Walt. With that, we'll conclude this panel and then go to the public comments session. I'll turn it over to Commissioner Pfannenstiel.

COMMISSIONER PFANNENSTIEL: I'm going to

turn it over to Commissioner Geesman.

PRESIDING MEMBER GEESMAN: Well, if nobody wants the duty, I'll take it.

Do we have any public comment?

MS. WHITE: We do, Commissioner. We have -- I hope I get your name right -- Steven Hockerith?

MR. HOCKERITH: Thank you for this opportunity. I, too, am trained as an architect and planner. I've been involved in energy efficiency for about 35 years, designed near zero energy homes back in the seventies, mainly using passive solar design -- go to the next slide -- so nothing I'm saying here is against energy efficiency. I just think that there's some larger issues looming in the future.

I start by forming an analogy that tuning the engines of the Titanic would not have avoided disaster. And that's basically referring to the fact that we're approaching a point where the supply of finite energy resources are not going to keep up with the demand. And so when we look at energy efficiency we have to look at a broader view.

The energy efficiency of a house matters

comparatively little if the house is halfway to Fresno and two family members are commuting to the Bay Area in SUVs. The relative importance of even the most efficient house, if it's not in a location where, where you can, you can walk to work fails by comparison of driving long distances.

By the same token, now we're getting most of our energy efficient appliances, most of, many of them from China. So the raw materials are traveling up to 20,000 miles or more by the time they get back to the house. So is the end result really what we want?

Back no more than ten years ago, the Energy Commission published a very good document. I was very excited about it, but I haven't heard much about it in a long time. It was called "Energy Aware", it was a planning guide, and it dealt with all these planning strategies for making whole communities smart energy efficient, which would be much more, have much more of a dramatic impact in individual homes.

Next slide.

They followed that with a document called "Places", which was using energy as a

yardstick to compare the efficiencies of different development options so that we could make informed decisions. In recent years, the GPS and GIS has made this kind of a planning strategy very simple to do. Back when Ian McKard was first doing his work, he wrote the book Design With Nature, he was doing all this painstakingly by hand, and what took him a year to do in mapping can be done in seconds now.

So we have the tools, we have the, the booklets printed by the CEC ten years ago. Why aren't we using these, and with the same emphasis that we're putting on energy efficiency in individual buildings, why aren't we doing that for whole communities?

Actually, this is the wrong -- go back to the last one. The last two slides that I, that I have -- go to the last slide. No, that -- this is a different presentation. Let me just read the last, the last slide that I have.

The future belongs to renewables and distributed generation. Why wait? Tie energy efficient programs to ever-increasing portfolio, renewable portfolio standards, which is to say that, like in Title 24, you could have people who

wanted to build outrageous houses, but in order for them to do that they would have to put in PVs instead of using polluting resources. So there, there would be an offset there. You can, you can use a lot of energy if you use, use it from non-polluting renewable sources. So that would be a trade-off that they could do.

Support community choice. I think, kind of I feel like putting the IOUs in charge of energy efficiency is a little bit like putting the fox in charge of the hen house. And there is community choice now, and that the CEC should be promoting that because that puts the public good first, not the, the stockholders.

Thank you for your time.

PRESIDING MEMBER GEESMAN: Thank you, Steve. Is there other public comment? Yes, sir.

Go ahead, Jane.

MS. TURNBULL: Okay. Commissioners, I'd like to pick up on what Steve had to say, but I have a few other comments, as well. I'm Jane Turnbull, and I'm here on behalf of the League of Women Voters of California.

One of the problems that the League has faced over quite a number of years is the general

public attitude on why bother to vote. It seems as though a single person's vote doesn't make a whole lot of difference. There's a similar attitude in terms of why should an individual be involved in this energy crisis. The crisis appears to be too large for any one individual to have a role in.

Little by little, we've managed to educate most of our League members in the state about peak power crises and the need to be aware of, of energy use during, you know, critical times. We think that the, the demand side approach is really something that, that definitely needs to be incorporated, because that is what gets through to the average individual out there.

The other point, another point that I'd like to raise is one that Steve mentioned in terms of the role of the utilities. We do have many League members who are very concerned about the utilities taking over the control of the individual energy efficiency portfolio. Little by little, we've come to get them to understand that energy efficiency is now part of resource planning and part of the whole supply side management concerns.

I think it would be helpful if the general public got a better understanding of how energy efficiency and demand side resources do fit into the whole, and that a better understanding of supply side management overall for the general population would be a step in the right direction. So definitely, this is a, a portfolio issue and the portfolio should not be limited to just energy efficiency, but it should include the entire supply side portfolio.

We also think that there needs to be a greater focus on the natural gas efficiency issues. Certainly electricity is important, but natural gas is a very large component of the electricity consideration, and it is a consideration unto itself, as well.

We certainly support the use of advanced meters as part of the general awareness of the individual out there. The extent to which there is a cost component throughout the day of different types of, of resources as they come online throughout a 24 hour period and throughout a 365 day period is something that the average public does not totally grasp, but they're getting there. And I think a little more emphasis on that

would be helpful.

We agree with NRDC that there needs to be consistency across the whole state in this area. We also think it's extremely important that we look at the energy and water inter-relationships. For every gallon of water that is saved, there is a certain amount of energy that is saved, as well. And, again, this is a linkage that is not very clear to the public.

Another point that I would like to raise is another one that, that Steve just mentioned, the importance of looking at smart, smart buildings. We've talked with a number of our local communities about green ordinances, and it's surprising the numbers of communities that are interested in, in that, but there has to be more of a, a movement across the state for communities to understand what really is at stake.

Santa Rosa has an excellent one. They really are training their local builders and architects along the way, and implementing the whole concept of green building and green communities at the, at a very early stage. The -- locally, what we've been talking about to our city councils is that when density housing is being

considered, certainly the developers should be looking at, at green buildings.

And in particular, we've been looking at the potential for affordable housing as green buildings. And I think there is a, a very near term market that would be attracted not only to the local communities from the, the energy perspective point of view, but also to meet the affordable housing needs.

Thank you.

PRESIDING MEMBER GEESMAN: Two questions, Jane. And I recognize that this isn't an either/or choice, but on the spectrum, based on where we are in the status quo with our programs, do you think that we need to make greater emphasis on peak savings or greater emphasis on energy savings?

MS. TURNBULL: Well, I think Sheryl answered it really very well. I think we do have to have a balance. I think the, the realization that there is a greenhouse gas implication of saving energy is important.

PRESIDING MEMBER GEESMAN: And on the conduct of our current IOU efficiency programs, more emphasis on marketing or more emphasis on

rebates?

MS. TURNBULL: I think the graphs that I saw today indicated that rebates have not been that significant. Perhaps that's, that is something that -- there may be part of the market for which that's important, but I think overall the, the market is broader than just rebates.

PRESIDING MEMBER GEESMAN: Thank you.

COMMISSIONER PFANNENSTIEL: Jane, I think you made a really valuable and important point on the, that the general public needs to better understand that efficiency programs are a part of the overall utility supply picture. So we're going to look to you to help us get that information out there. I think that we have all tried and, and I don't think we've succeeded at this point.

But then building from that on to the overall question of getting some of the information out to customers, as we've been hearing really most of the day, some of the lapse, some of the gaps of information to customers, do you have any general thoughts on how do we get customers better knowledgeable about and involved in energy efficiency?

MS. TURNBULL: Well, I do think Flex Your Power does a, a really great job. That does not necessarily personalize it, and I think perhaps case studies are always a, you know, a good approach. And I think if you could do it on a community basis and show how, for instance, Santa Rosa, may be making a, a terrific difference out there with their, their creative ordinance, you know, I'm trying very hard to get that same ordinance passed in Los Altos Hills, which would be fascinating because they're the mega-houses. And yet there's quite a bit of interest among the, the councilmen there.

COMMISSIONER PFANNENSTIEL: Thanks.

PRESIDING MEMBER GEESMAN: I want to call on the gentleman in the third row.

MR. HODSON: Thank you, Commissioners and staff. How's that? Thank you.

I'm Mike Hodson, President of ConSol. Our market is the residential new construction market in California. And I wanted to just kind of give some information that I think the information that both the CPUC and the Energy Commission recently has been receiving regarding the 2006 to 2008 res new construction program is

inaccurate, and I, and I'd like to give you a little background first.

Our market is residential new construction. We service the production builder, and our credentials are basically we have the largest energy efficiency program in the state. Most of you I've had direct conversations with and this will be repetitive, and I apologize. But to get all of us on the same foot, our Comfort Wise program between the 2002 and 2004 IOU period sold approximately 74 percent of their new construction program. In 2005, Comfort Wise filled 92 percent of the residential new construction programs from Edison and PG&E. We were not allowed to participate in SDG&E's program as it was closed to outside consultants, which we have a different issue with.

But in listening at kind of the big picture, because I do try to get very actively involved with the Energy Commission and working with the building industry, and understanding codes and implementing them effectively, the issue to me right now is what's our problem in California. And our problem in California, from the perspective of where should we put our money,

is peak load. And what's the number one problem, or number one issue within peak load? It's residential air conditioning.

And if you want to address the residential air conditioning market, you do it in the most cost effective way, and that is at new construction time, where we have uniform construction standards and we have mass purchasing.

So I kind of come down to the, this is really an issue that I love. I mean, this is what we do, we're in comfort, we're in air conditioning, we're in new construction. This is a no brainer. When we come to read the reports and look at the filings from the IOU, we see that their TRCs are about half, .5. We're going, you know, how can this be. We have, you know, the number one market to address peak load, it should be at the most cost effective time. We have the money to do it. And yet if you read the tech market report when it was released in May, it actually said de-fund res new construction, it's not cost effective.

Now, the July 1st report took that out, but they make comments such as, and I won't name

the utilities, with a TRC of 0.43, the California new homes program appears to be particularly expensive.

So the issue I want to take is I don't think I want the Commissioners from either commission to think that res new construction is not cost effective. If you plug Comfort Wise into the TRC calculator from the CPUC, you get a TRC greater than one. It's an effective program, it addresses peak load, it has training, it has onsite inspections, and I can go on and on and on, and I won't do that.

But my single point is res new construction is where we should focus I think a significant amount of resources in the residential new construction market. It can be cost effective, and the utilities should fund it.

Thank you.

COMMISSIONER ROSENFELD: I, I think I'm not understanding the problem. When you say residential new construction, does that mean programs that beat the existing Title 24 standards?

MR. HODSON: Yes. They have, they must, the RNC programs, the residential new construction

programs are in the new construction portfolio. So they have to exceed whatever code there is at the time. So the 2006 through 2008 would have to exceed the 2005 Title 24.

COMMISSIONER ROSENFELD: And are, are you saying that the, this report is -- are, are you saying that there's just sort of -- I'm, I'm not clear whether this is a, this is a simple problem or a mathematic -- an arithmetic problem.

MR. HODSON: I think it's a, a little bit of both, but one, one more than the other. There's been numerous comments today about the avoided cost issue. And that avoiding peak is not given enough credit. I think that's the smaller problem. The larger problem is administrative and marketing cost to the IOUs. In the May 27th costs, in the residential new construction program, one IOU proposed a 47 percent administrative cost. I'd like to compliment them, they have now backed off to a 27 percent administrative cost to run a program to, you know, service residential new construction.

I think it can be done more efficiently, more effectively, and more knowledgeably by people in the field who have already done it for probably

-- well, we've done it for over nine years now.

COMMISSIONER ROSENFELD: And one last question. What, what will the, the best example of how you meet the standards. Would it be a, a high EER --

MR. HODSON: Well, that --

COMMISSIONER ROSENFELD: -- efficiency -- I'm sorry, air conditioner, or what?

MR. HODSON: That's where your design would be very very important, Commissioner. What you would want to do, since the 2005 standards are TDV, you're going to be assuming, probably, they're all ready with tight ducts and a 13 SEER, and possibly a few other features like especially spectrally selective glass, which is very cost effective.

So one of the issues is you can just go anything over code, let's give credit for. Well, some of the things over code for the next step could be gas appliances. I love gas appliances, but what does that have to do with reducing peak load? So you'd want to design a program that specifically is designed, mechanically engineered HVAC systems, TXVs, high EERs, so they would address peak load.

COMMISSIONER ROSENFELD: I was just thinking just maybe if you stick around for some minutes we can talk.

MR. HODSON: I'm here. Thank you, Commissioner.

PRESIDING MEMBER GEESMAN: Thank you, Mike.

Yes, sir.

MR. KNIGHT: I'm Bob Knight, President of Bevelaqua -- it's a consulting firm in Oakland for the Italian challenge to, it's generally referred to BKI.

The subject that I really want to talk about has to do with the general work that we have done in the retrofit housing area. We work in all sorts of fields to move energy innovations into actual use, and the thing that we've been focusing on in the last several years has been this problem of the huge number of existing homes that represent such tremendous energy savings that just aren't being realized. I, I certainly support all that's being done in the new construction area and Mike's work, in particular, but I'm interested in the other 99 percent of the homes in California that at any given point are already there.

And a lot of them that are already there only for about year or less are still creating problems that need to be fixed. They are built with problems that still need to be fixed. So we have a huge potential there, and with the growth in California's population over the next 15 or 20 years we're going to have just about all the existing homes that we have now still existing. So it's not as if the new home construction program is going to solve the existing home problem. They're, they're going to be with us.

I want to talk about two things that are closely related. There's been a lot of talk here, some really interesting areas by Alan and, and others, who were talking about motivations. And I, I'd like to tie that to the strategic need to include more comprehensive retrofit programs in any energy efficiency portfolio.

The, the project that we've been doing as a third party for the last several years in the CPUC program has to do with training contractors and supporting them in the field so that they can do better work to generate energy efficiency improvements. The -- and one of the things that we have discovered in, just in passing, is that

the state of knowledge about how houses really operate among contractors is -- I'm not quite sure how to describe it in words other than abysmal.

Most contractors, including the specialist who comes to your house to replace your air conditioner, know very little about what they're doing. They don't know how it relates to the functioning of the house, they don't know how to create energy efficiency, and very likely they're going to put the air conditioning in, especially in those climate zones that are not going to have Title 24 2005 improvements attached. You're not going to get any significant energy savings at all.

So the, the most interesting thing that we have found in our program is that we go in, our contractors will sell jobs. We, they do custom diagnoses on houses, they sell retrofit, comprehensive retrofit packages that suit the house, and then implement them properly. And what we find is that people spend four or five times as much money on these retrofits than can be justified by the energy savings. And yet, we have happy customers. We have virtually no complaints. We're doing, we're working right now at the rate

of about a thousand houses a year, and growing, only in the PG&E service territory.

And so the question is, why are they doing this? We, I, I twisted Lauren Letzinhiezer's arm, who is our independent evaluation consultant, a couple of years ago to work with me to come up with a survey that could try to get at people's motivations. And then we did it again this past, this year. We're doing it right now, and we've got some preliminary results in. Lauren's still doing more surveys.

But what these surveys result in -- and this is an area in which there's virtually no research, there is nothing to, to base this on, that's why we did it -- is that energy efficiency is not their main motivation for doing energy efficiency work. People say this kind of thing, but there hasn't been much evidence of it. What we find is that there are many other motivations, many other peak concerns that different people have, and almost everybody has multiple concerns. They're not just interested in energy efficiency or just interested in comfort, or whatever. They have a whole complex of reasons that they want to do this work, and that's why they're willing to

spend more money on it.

We also find that some motivations appear, at this stage in our survey work, to be more powerful than energy efficiency itself in selling energy efficiency. And certainly the complex of all of these motivations taken together vastly overwhelm energy efficiency as the driving force. If I had to guess now, I would say that energy efficiency, per se, and this is a gross generalization because people's mix of motivations is very different, as, as Alan said, I would say that energy efficiency, the idea of saving money on your electricity bill is not more than 20 or 25 percent of the motivation for doing this work.

That takes me to another -- well, pet peeve of mine, which is that the existing California TRC process for both the participant test and the TRC require that we show the full participant cost in our TRC. Well, isn't it logical that if only 20 percent of the motivation is energy efficiency, that I shouldn't have to, to freight my TRC with a 15 or $20,000 participant cost. It doesn't make any sense.

So I would strongly urge the CPUC to reconsider that for this kind of program what

happens is that all these programs and these, these processes that we use to evaluate programs are predicated on one or two measures being done in a program. Just lollipops, one little thing. Maybe it's a big thing, but it's just one thing. And usually, very often when you do just one thing, it only has one kind of benefit.

If you put in CFLs you are mostly going to be saving money. You're not going to be improving the quality of light. You're not going to be making it easier on the customer. You're not going to be selling him a cheaper product so he's going to have to fund in some of the cost, and so forth. So those things tend to be rather narrow in, in the kinds of motivations that can sell them.

But when you do a true comprehensive retrofit of a home, you, you tap into this much more complex and rich motivational structure. And I, I should say also that in our program, we do not use incentives. So we can sell an average, the average is moving between 12 and $15,000 a house right now. We can sell these retrofits with no incentives. And we started it that way on purpose, it was kind of a gamble, because we felt

that certainly utility priorities are going to change over the years, as they always have. Sooner or later, any incentives that we give people are going to fall away, and they'll probably fall away just about the time the contractors are really depending on them.

So we decided to just start the program without incentives. And it's been working fine. Also, we don't spend money on advertising. We taught the contractors how to market effectively for themselves. We're not getting any complaints from the contractors. They're finding the customers that they need. We, we showed them how to do it, and the ones who are, are our best customers, our best contractors, are growing and very very happy that they've made this change.

So anyway, I, all of this winds up being a kind of request that energy efficiency program portfolios include some comprehensive programs. Even if they have a low TRC in the early years, this is very much like codes and standards, as Doug was talking about. In the first year, you don't get much. But in the second year, those contractors you trained in the first year are going to do a bunch more houses, and the third

year, and the third year. So every year that you train more contractors, you just keep getting more and more and more savings.

We calculated at one point just as a kind of a, a case in point, a theoretical case, if you were able to do 500 houses in your first year, in your second year, if you just kept training the same number of contractors each year, you'd do 2,000, and in the third year you'd do 4500, and in the fourth year you'd do, I believe it was like 18,000. So, you know, there is a, a kind of a chain letter approach to this that contractors simply keep delivering more energy savings long after you have made the investment in training those people.

So at the -- even, let me say that it, this isn't all positive. These are difficult programs to teach. It's difficult to teach contractors to do things right. It's difficult to teach them to use scientific equipment to diagnose a house, to learn how to do a different kind of selling, to learn how to do everything really the right way, and so you don't get every contractor doing this very easily. We find that we have to mentor them in the field, we hold their hand a

lot. But the result is that we wind up with a set of elite contractors who provide models for the rest of the contracting industry as we move forward.

And so a program like this could, at this stage in the development of energy efficiency programs in the state, could never be the principal program. It couldn't do it. It would be too expensive, it would take too long, you would see results showing up in the third, fourth, fifth year, really substantial results, but you would not be very happy with the results you got in the first year or two.

So facing reality, there, the primary thrust of, of today's utility programs will, will be as it is, to do things that generate quick savings, largely. But in any portfolio I think it's very very important that you include programs of this type. It doesn't have to be my program. It can be anything that does comprehensive work. And that means that what you're doing, given the fact that it is so difficult to train the whole body of contractors to radically improve their skills and, and the quality of their work, that you need a way to set a, a model in place to

provide benchmarks for the contracting profession, to engage the Contractor's License Board, the societies, the professional organizations, and the utilities in investing more heavily in contractor training and programs that monitor and help, help contractors improve the work that they do.

So I would like to see, first of all, more research done in the area of motivations for why people do this. We're sort of breaking ground here because this research just simply hasn't been done, and we know that the research that we've done is not the very pinnacle of sophistication. There is much more that could be done and should be funded. In fact, I think this is the kind of thing that is an appropriate subject for PIER, even though PIER is normally focused almost totally on technologies. Nobody else is doing this because nobody else has the funds for it. So I would like to see something like that happen.

And I, I would also like to see the, the IOUs invest more in training contractors. I know that PG&E already does a great job in Stockton with training contractors in a variety of things, but I think it should be given even more emphasis, especially with Title 24 moving in and all of us

facing a very uncertain future about what's going to happen with the actual implementation of Title 24, and in addition to that, as I said, the comprehensive programs.

Thank you.

PRESIDING MEMBER GEESMAN: Thank you very much.

Any other public comment?

Lorraine, do we still have anybody on the phones?

MS. WHITE: They went ahead and muted the phones for us because there was a speaker feedback.

PRESIDING MEMBER GEESMAN: Okay.

MS. WHITE: So if you give them just a moment so they can mute that.

PRESIDING MEMBER GEESMAN: Okay. Any public comment from the phones?

MR. ELLSWORTH: Yeah, I've got --

MS. WHITE: You need to speak up, please.

MR. ELLSWORTH: Okay. My name is Sid Ellsworth, the name of our company is SIDELL Systems.

I have a comment. I've been listening

to most of this all day, and --

PRESIDING MEMBER GEESMAN: You need to speak very close to the, to the phone and, and fairly loudly.

MR. ELLSWORTH: Okay. Is that better?

PRESIDING MEMBER GEESMAN: Yes.

MR. ELLSWORTH: Okay. Most of this talk is all about electricity, and I have been trying to find ways to get our state and our government to do more for, for preserving natural gas. We have a natural gas energy saving device where we can save on large buildings and, and federal buildings and state buildings, commercial buildings, ten percent of their natural gas bill. But there's, this year again we ran out of funds from PG&E and SoCalGas. We had a number of clients that were interested, but it's funny, they, if they don't have the incentive program, they just seem to drop by the wayside.

We also have a state agency where they have, they are interested in, in using our equipment, but we can't get any money out of the state. I don't know, I've been trying to contact engineering firms, and trying to get them to look at how can design be more energy efficient. But,

like I said, it seems to be mostly when people talk energy efficiency it's, it's all about electricity. And it just would be nice if there was a little bit more put into the programs that were, would relate to natural gas energy efficiency.

PRESIDING MEMBER GEESMAN: Thank you, sir.

MR. ELLSWORTH: It was an interesting day.

PRESIDING MEMBER GEESMAN: Thanks very much.

MR. ELLSWORTH: Okay. 'Bye.

PRESIDING MEMBER GEESMAN: Other public comments. Anyone else on the phone care to share a public comment?

Okay. Thank you all very much for participating. It's been a very rewarding day.

We'll be adjourned.

(Thereupon, the Integrated Energy Policies Report Workshop of the California Energy Commission was adjourned at 5:00 p.m.)

CERTIFICATE OF REPORTER

I, CHRISTOPHER LOVERRO, an Electronic Reporter, do hereby certify that I am a disinterested person herein; that I recorded the foregoing California Energy Commission Workshop; that thereafter the recording was transcribed.

I further certify that I am not of counsel or attorney for any of the parties to said workshop, or in any way interested in the outcome of said workshop.

IN WITNESS WHEREOF, I have hereunto set my hand this 26th day of July, 2005.